Harvest and Use of Fish and Wildlife by Residents of Kake, Alaska

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CHAPTER ONE
STUDY BACKGROUND

INTRODUCTION

This research project is a segment of an ongoing study that investigates the uses of fish and wildlife resources in a sample of southeast Alaska communities, and explores relationships between timber harvest activities and these fish and wildlife uses. This report describes subsistence uses of wild resources in the community of Kake, and the relationships of these activities with timber harvests in the area. Other communities previously studied include Tenakee Springs (Leghorn and Kookesh 1987), Yakutat (Mills and Firman 1986), Angoon (George and Bosworth 1988), and Klawock (Ellanna and Sherrod 1987).

The town of Kake was chosen for several reasons. Kake is a long established community whose residents have a lengthy history of involvement in hunting, fishing and gathering wild foods. In recent years, intensive timber management has taken place on private and national forest lands adjacent to Kake and the town continues to experience the effects of this activity. Additionally, research in Kake provides an opportunity to investigate hunting and fishing activities and to evaluate the effects of logging on hunting and fishing patterns in a social and geographic setting that is different from the previously studied communities on Prince of Wales, Chichagof, and Admiralty islands.

Kake is a town of approximately 600 permanent residents located on the northwest end of Kupreanof Island in southeast Alaska (Fig. 1). The majority of land in the Kake area is federally owned and managed by the U.S. Forest Service as part of the Tongass National Forest. Additional land owners include Sealaska, the regional Native corporation, Kake Tribal Corporation, the village corporation, and the City of Kake (Fig. 2).

Timber harvesting has taken place in the vicinity of Kake for many decades, in various forms. In the early 1900s, local people logged to supply the canneries with materials to build fish traps and to provide logs to the local sawmill for housing and other construction projects. Timber was also

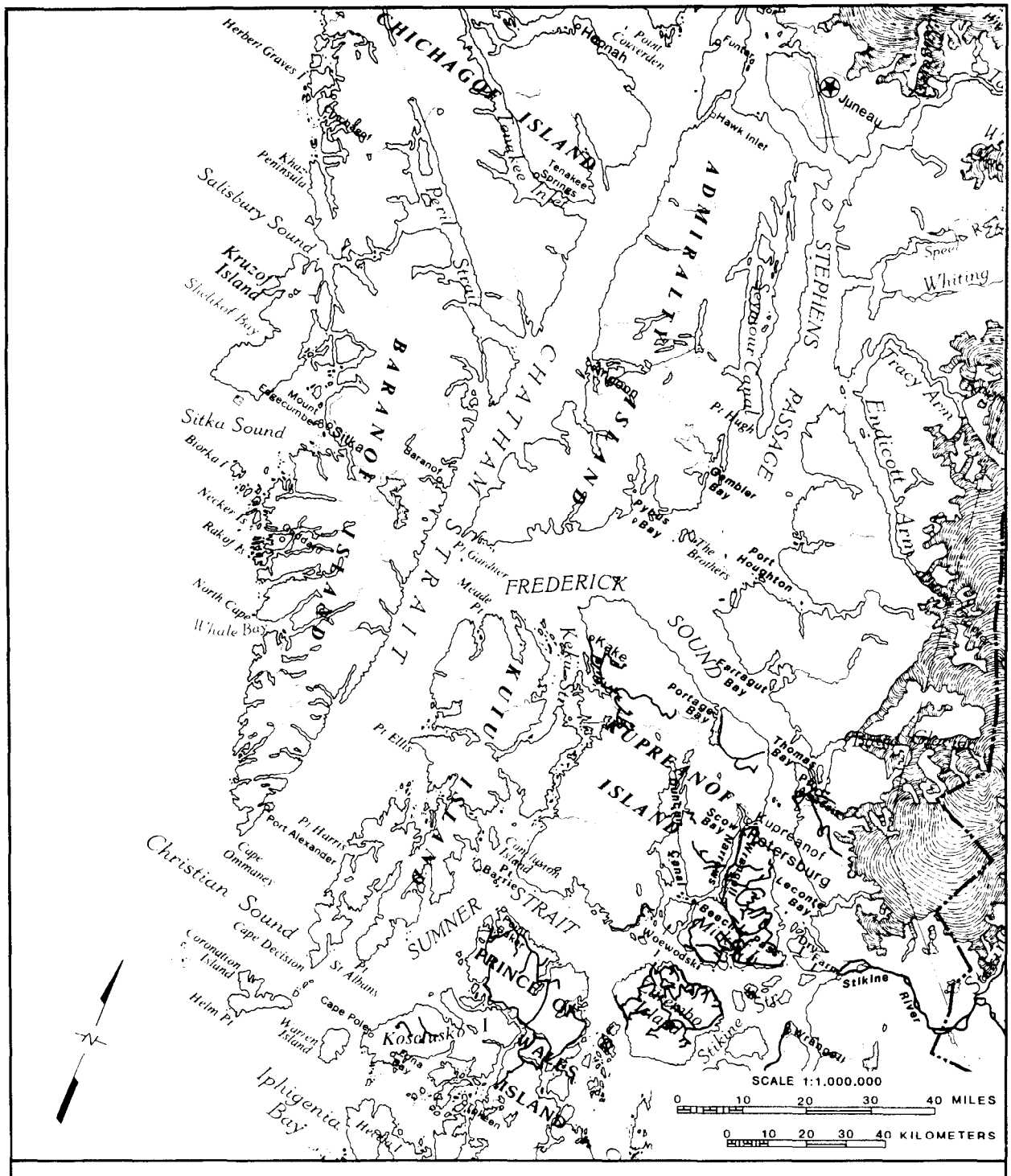
harvested and towed to sawmills on other islands for use in building canneries, herring reduction plants, and various other of the commercial enterprises that operated in southeast Alaska during the first half of the twentieth century. Most of the early logging involved beach front harvesting or high-grading from selectively chosen drainages. Industrial scale clear-cut timber harvest operations in the Kake area began on Forest Service land on Kupreanof and Kuiu Islands in 1963. This type of logging is conducted along beach fronts, major drainages, and hillsides, involving substantial tracts of land. The timber harvest from public lands was primarily destined for the Sitka pulp mill; harvest from private lands is largely exported to Asia as whole logs or cants.

PURPOSE AND OBJECTIVES

The potential effects of logging on fish and wildlife habitat in southeast Alaska and the consequences of these effects for local rural uses of fish and game have been identified by wildlife management agencies, public organizations and local communities as important resource issues in southeast Alaska. Concerns about these effects and their relationships to the continuing public use of fish and game in southeast Alaska have been raised by southeast Alaska Regional Fish and Game Advisory Council, local Fish and Game Advisory Committees, and several local communities and interest groups (cf.Southeast Regional Council, 1988).

As a result of the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, subsistence uses by rural Alaska residents must be considered in the development of management policies and plans in all federal lands in Alaska, including national forests. ANILCA Section 802 requires that:

> Consistent with sound management principles, and the conservation of healthy populations of fish and wildlife, the utilization of the public lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence uses of the resources of such lands; consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for each unit established, designated, or expanded by or pursuant to titles II through VII of the Act, the purpose of this title is to provide the opportunity for rural residents engaged in a subsistence way of life to do so.



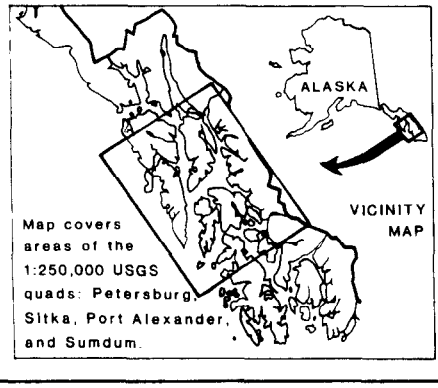


Figure 1. LOCATION MAP

——— Logging Roads

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

Subsistence Division

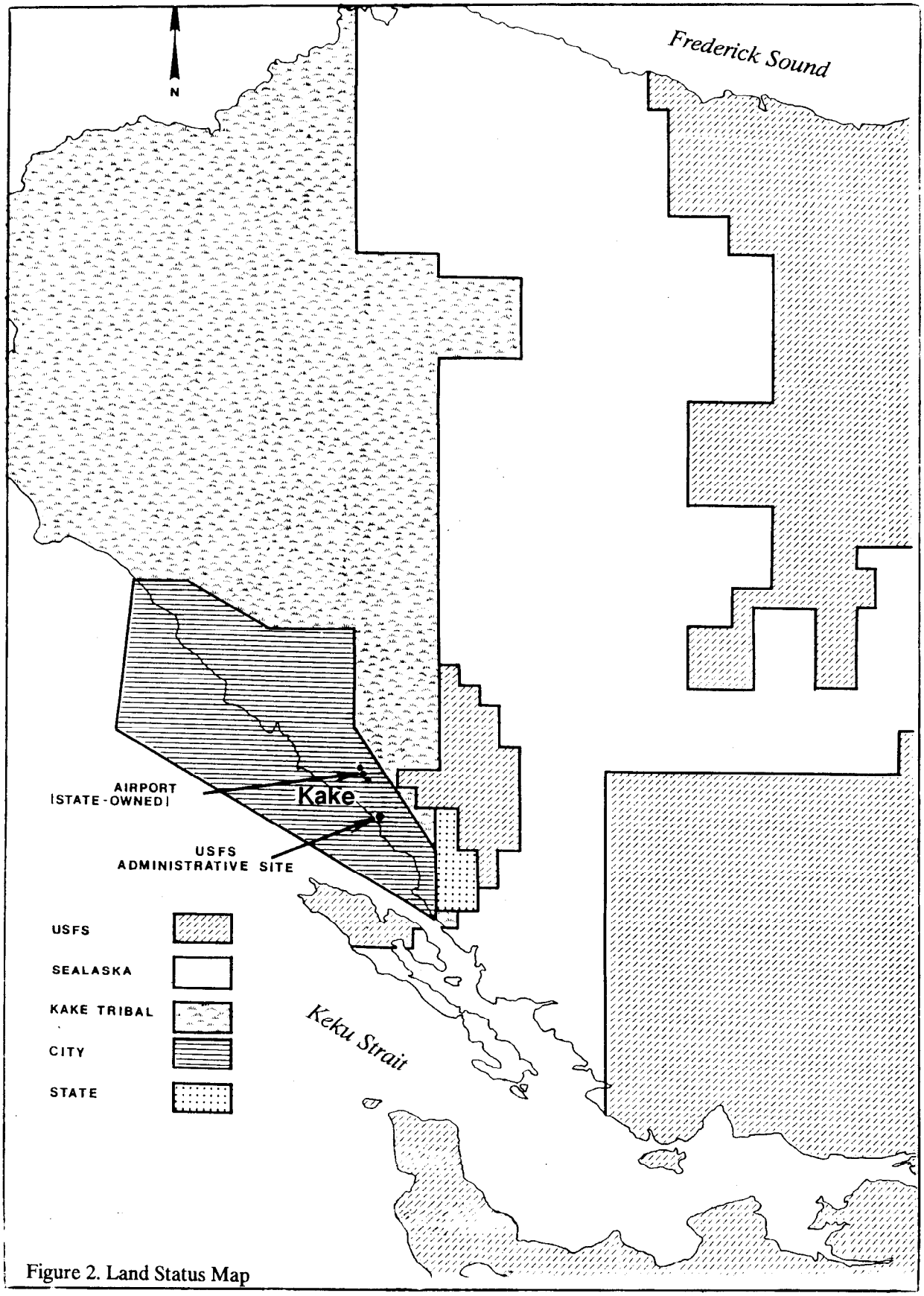


Figure 2. Land Status Map

Also, ANILCA Section 810 requires that each federal agency "in determining whether to withdraw, reserve, lease or otherwise permit the use, occupancy, or disposition of public lands...", to "evaluate the effects of such use, occupancy, or disposition on subsistence uses and needs...". Section 810 determinations are therefore required for all Tongass National Forest Planning documents.

Despite the concerns raised by fish and wildlife managers, foresters, and the general public, and the data needs brought about by the forest planning process and ANILCA, little information is currently available about the effects that logging and the development of the timber industry have had on local patterns of fish and game use in southeast Alaska. Fish and wildlife harvests currently contribute to the food supply of 90 percent of the region's population (Alves 1980, Mills and Firman 1986, Leghorn and Kookesh 1986, Ellanna and Sherrod 1987, George and Bosworth 1988). Fish and game uses play a significant role in the socioeconomic systems and ways of life of many southeast Alaska communities(Mills 1982, George and Kookesh 1982, 1983, Nelson and Schroeder 1983, Mills et Al. 1984). Further research is needed in order to assess how logging practices affect traditional subsistence uses and local socioeconomic systems.

The purpose of this report is fourfold. The first purpose is to provide resource use information and socioeconomic data that will be useful to state and federal agencies, local communities, fish and game advisory committees, and the Southeast Regional Council for participation in the Tongass National Forest planning process. The second purpose is to understand some of the fundamental relationships between timber harvesting activities and patterns of fishing, hunting and gathering wild renewable resources in Kake. Third, the provides basic information on hunting, fishing and gathering activities that can be applied to the development of fishing and hunting regulations by the Alaska Department of Fish and Game and the Alaska Board of Fisheries and Board of Game. Finally, this report seeks to contribute to an understanding of the process of culture change operating in Alaska today.

METHODOLOGY

Several data gathering techniques were employed during the course of the research project, including literature review, key respondent interviews, and a systematic household survey. Each of these is described below.

Literature Search

Prior to the initiation of field work, a literature search was conducted to provide background data on the history of Kake and its socioeconomic conditions and population. The Kake Community Profile prepared by Environmental Services Limited for the Alaska Department of Community and Regional Affairs, Kake Coastal Management Program and the Kake Comprehensive Policy Plan (Quadra Engineering and R.W. Pavitt and Associates, Inc. 1984) provide general information on Kake's economy, government, community facilities, landownership, transportation, and physical, environmental and climatological data as well as a brief community history. Southeast Alaska Subregional Summaries and Community Profiles, unpublished reports prepared by the Division of Subsistence from secondary sources, provides information on demographics, employment, land ownership and local wild resource use.

In 1944, Walter Goldschmidt and Theodore Haas collected land use information from the people of Kake and presented it to the Commissioner of Indian Affairs in a report titled "Possessory Rights of the Natives of Southeastern Alaska". This report provides a historical view of hunting, fishing, gathering and land ownership in the Kake territory and includes clan ownership information. Kake clan names and origins, and community history are described by Swanton (1904-05) and Krause (1956 [1885]). deLaguna (1960) discusses construction and design of Kake forts, ownership of territories and the Kake Tlingit's involvement in the sea otter trade. Oberg (1973) presents an ethnographic description of the Tlingit of southeast Alaska from the time of contact with Europeans in the late 1700s to the 1930s.

Information on the history of timber harvesting activities was also assembled from several sources. Maps, aerial photos and records showing cutting units, yarding dates and road corridors were obtained from the U.S. Forest Service District Office in Petersburg. Kake Tribal Logging, a subsidiary of Kake Tribal Inc., the Kake ANCSA village corporation, provided information on logging activities on Native corporation land.

Key Respondent Interview and Mapping

The project was introduced in February of 1986 to the Mayor and the city council, the Alaska Native Brotherhood (ANB) and Kake Tribal Corporation, to obtain approval and receive suggestions on content and methodology. At this time contacts were made with the U.S. Forest Service District Office in Petersburg, who subsequently provided housing and maps of the roaded areas on Kupreanof Island.

Several other Kake residents as well as members from the previously mentioned Kake organizations helped to compile a list of twenty-one knowledgeable and experienced people to be contacted for in-depth interviews. These key respondents were selected based upon their knowledge of local history and community development and their involvement in hunting and fishing activities.

Because this project investigates changes in resource use over time, it was important for all key respondents to have lived in the area for at least the past 15 years. Additionally, an attempt was made to include each major occupation, age, sex and ethnic group among the key respondents. Tables 1 and 2 profile Kake residents who were chosen as key respondents.

Information from the key respondents was collected in two or three open-ended interview sessions that lasted from three to four hours each. Questions asked during these sessions are included in Appendix B. The following topics were covered:

1. Key Respondent Profile. Background information on the respondent and his/her household was solicited. Categories included age, sex, ethnicity, place of birth, length

of time using Kake area resources, harvesting technology owned (boats, fishing gear, etc.) and employment history.

2. Resource Use Area Identification. The key respondent located and named areas on a 1:250,000 scale map where he/she had hunted, fished or gathered throughout his/her lifetime in Kake. Salmon, deer, intertidal resources (clams, cockles, crab, marine plants, herring eggs), furbearers, waterfowl and seal were the major categories of interest. The areas were usually drawn on the map by the researcher, guided by the respondent, although occasionally a key respondent would also draw on a map.

3. Chronology of Use. The dates when an area was used were recorded on the use area map.

4. Resource Trends. Comments related to observed population increases or decreases for species in each specific use area was noted.

5. Means and Methods of Harvest. Mode of access and general harvesting methods and strategies were recorded for each use area identified on the map.

6. Reasons for Change in Use. If a key respondent no longer used an area, the reasons for that change in use were identified and recorded.

7. Responses to habitat changes and other timber harvest activities. Timber harvest history maps showing logged areas and cutting dates on Kupreanof, Kuiu, Chichagof, Baranof and Admiralty Islands were shown to key respondents. Open ended questions were asked about the respondent's wild resource harvesting in previously identified use areas, in the context of logging related changes.

Data collected from the key respondents provided the researcher with information on patterns of resource and land use within the last 50 years and formed a basis for the design of the community resource use survey. Because of the scarcity of published information about Kake, several key respondents also supplied important information about the history of the logging and commercial fishing industries as well as a history of the town itself.

Table 1. Kake Key Respondent Profile

Age Group	Occupation	Native	Non-Native	Male	Female
30-39	Logging	X		X	
	Logging	X		X	
40-49	Government, Logging	X		X	
	Business, Longshoring	X		X	
50-59	Private Business	X		X	
	Private Business	X		X	
	Commercial Fishing, retired	X		X	
	Commercial Fishing	X		X	
	Commercial Fishing, Business		X		
60-69	Retired	X			X
	Commercial Fishing	X		X	
70-79	Commercial Fishing	X		X	
	Commercial Fishing	X		X	
	Commercial Fishing	X		X	
	Commercial Fishing, retired	X		X	
	Retired	X		X	
	Retired	X		X	
	Retired	X		X	

Table 2. Summary of Key Respondent Characteristics

Characteristic	Percent Occurance
Age Group:	
30-39	11
40-49	11
50-59	28
60-69	11
70-79	39
Male	94
Female	6
Native	94
Non-Native	6

Resource Use Survey

A resource use survey was developed with the help of Subsistence Division and U.S. Forest Service staff and was later modified to include suggestions supplied by key respondents (Appendix A). This survey was administered to 70 randomly selected households in Kake, which were selected using the following method.

All house locations in Kake were identified by the researcher prior to administration of the survey using an Alaska Department of Community and Regional Affairs base map of existing houses within Kake city limits. Vacant houses were deleted from consideration and newly built houses and float homes were added to the map. A map of housing units located outside the Kake city limits was also drawn by the researcher. All 230 of the identified households in Kake in 1986 were listed and 30 percent, or 70 households, were randomly selected to be surveyed.

The survey took one to two hours to administer and occasionally involved more than one household member. Questions were asked about virtually all species of fish, shellfish, upland and marine mammal, bird, plant and marine invertebrate used in the community. One portion of the survey focused on uses of deer, and questions were asked about areas used for deer hunting during the lifetimes of respondents while they lived in Kake as well as transportation used to access these areas. Perceived changes in hunting, fishing and gathering activities due to timber harvesting were recorded as were any general comments and concerns of Kake residents. Other comments containing socioeconomic, demographic and resource harvest and use information that resulted from the survey were recorded. Due to the random nature of the survey, the results are considered valid for the community as a whole.

Survey data was entered into an automated statistical program, Statistical Package for the Social Sciences (SPSS), for compilation and analysis. This task was performed by the data management staff of the Division of Subsistence. Resulting data was subsequently included in the Division of Subsistence Community Profile Data Base.

LIMITATIONS

In this project the solicitation and use of verbally reported information substantiated by the researcher's observations followed standard anthropological field methodologies. The information for this project was collected during a six month period (March 1986 through August 1986) and may not be fully representative of conditions in Kake after this time. Information obtained from sources other than project research is appropriately cited. Data presented here that was collected through the resource use survey portion of the project is labeled as "random survey" information. Information collected through in-depth interviews with key respondents is described as "Key Respondent" information and is presented in both text and mapped format.

Information presented on maps was collected from 18 individuals in the community, all of whom were among the key respondents. While many of the community use areas are represented, it is very likely that some areas have been omitted since a total sample of the community was not obtained and key respondents were not randomly chosen.

Resource harvest information obtained from the survey was collected from a random sample of 30 percent of Kake's households. While this is not a total sample of all of Kake households and some information may have been omitted, this information can be expanded to the community as a whole in order to estimate total community harvest.

CHAPTER TWO

STUDY AREA

PHYSICAL SETTING

Geographic Location and Topography

The community of Kake is located on the northwest shore of Kupreanof Island in southeast Alaska. Juneau is 105 air miles to the north of Kake, Sitka is about 50 air miles to the west and Petersburg is 40 air miles to the south. Admiralty, Kuiu and Prince of Wales islands surround Kupreanof Island to the north, east and south. Residents of Kake utilize these islands as well as Baranof Island, and occasionally Chichagof Island, for hunting, fishing, and gathering. The waterways of southeast are ice free year round, and provide an essential transportation link between communities in the region as well as outside the region. Figure 1 shows this area.

Kupreanof and surrounding islands are part of the Alexander Archipelago, a system of islands, fiords and waterways created when earlier drainage courses eroded and deepened during the Pleistocene era. The resulting geologic forces left a string of mountainous islands. The lowlands of the island system are dominated by poorly drained, fine textured soils which have favored the development of peat lands, organic soils and muskeg conditions. Many different environmental systems have been described in this region and they collectively account for the complexity of southeast's marine coastal environment. These include glaciers, high alpine meadows, densely forested mountain slopes and valleys, estuaries, shallow and deep water bays and reefs among others.

Climate

Maritime weather dominates southeast Alaska and the Kake area. The climate is characterized by cool summers, mild winters and substantial rain and snow. Temperatures in the summer range from 44 to 62 degrees Fahrenheit. Winter temperatures typically range from 26 degrees to 38 degrees Fahrenheit. Yearly temperature extremes range from -6 degrees Fahrenheit to 88

degrees Fahrenheit. According to the National Weather Service average mean sea level rainfall for the 57 year period 1922-1979 was 53 inches while average mean snowfall was 51.5 inches. The average annual rain fall indicates that the northwestern Kupreanof climate is somewhat dryer than other areas of southeast Alaska where 80 to 100 inches of annual precipitation is more normal for sea level measurements.

Vegetation

The vegetation of southeast includes a diverse system of forest, meadows, muskeg, beach grasses, and alpine tundra separated by transition zones all of which are found in the Kake study area (Selkregg n.d.). The forest of southeast Alaska is a portion of a cool rain forest that is an extension of the rainbelt forests of the Pacific Northwest. Most of the forest is old growth and from a distance the mature stands have a ragged appearance because they consist of trees of various ages, sizes and degrees of vigor.

The forest usually extends from sea level to an altitude of about 3000 feet in the southern part of the southeast region where Kake is located. The dominant tree species are western hemlock and Sitka spruce with smaller amounts of red cedar and Alaska yellow cedar. Alaska yellow cedar is often found as a small tree in swamps or muskegs. Scattered stands of red alder are found along streams, on landslides and other disturbed areas. Black cottonwood, seen predominantly in major mainland river valleys, and lodgepole pine are other common species. Understory vegetation includes young conifers and shrubs, such as devil's club, blueberry, huckleberry, and rusty menziesia. Moss covers the ground and lichens hang from spruce branches.

Grass sedge meadows usually are found at low elevations, often along the coast. The vegetation consists mainly of grasses, sedges and other herbaceous vegetation. Many stream channels are bordered by willows.

Openings occupied by muskeg or bog plant communities are interspersed throughout the forest. These wet areas are dominated by sphagnum mosses and sedges, but also include low shrubs, forbs and a few scattered trees. Grey, dead trees commonly ring these bogs. Muskegs on western

Kupreanof comprise 47.4 percent of the land surface compared to 9.1 percent for the entire Tongass National Forest (Quadra, 1984 :26). As a result, muskeg areas are an important component of the land base surrounding Kake.

The alpine tundra community usually lies above 2500 to 3000 feet (750 to 900 m). It occupies the region above the transition zone. Low, mat forming vegetation covers much of the area and cushion-like plants occupy crevices on exposed outcrops and talus slopes. Soils are generally thin, gravelly and stony, but organic soils may form locally in depressions.

Fish and Wildlife

The many variations in vegetation provide habitat for a large number of wildlife. Sitka black-tailed deer depend on the dense, old growth timber with its relatively snow free understory for winter cover. They feed on the fairly sparse shrub species, lichens, spruce tips and ground cover, and venture under severe conditions onto the beaches to feed on kelp and beach vegetation.

Black bears predominantly inhabit the forest and are relatively numerous. They occur throughout most of the area except on Admiralty, Baranof and Chichagof islands. Brown bears spend more time away from the timber in the alpine zone or on coastal marshes. They are found on the mainland and on Admiralty, Baranof, and Chichagof islands.

Wolves range widely between habitats on Kupreanof and Kuiu islands searching for food. They are also found on the mainland and many of the other islands, but not on Admiralty, Baranof and Chichagof islands. Other furbearers found on Kupreanof Island and other islands include mink, river otter, beaver, and marten.

Blue grouse are the only game bird associated with the coastal forest. Many nongame species such as eagles, owls and woodpeckers also dwell within the forest. Ptarmigan are found in alpine areas.

Waterfowl and shorebirds occupy the meadows, tidelands and salt marshes of the area. Large numbers of diving ducks, mallards, mergansers and Canada geese over winter in the many estuaries and bays of southeast. Many migrating waterfowl utilize the area on their way to nesting or wintering grounds. Admiralty, Kuiu, and Kupreanof islands lie along a major spring migration route. The

vicinity of Rocky Pass and Big John Bay is identified by the U.S. Fish and Wildlife Service as one of the most important southeast Alaska resting stations for migrating waterfowl and is especially important during spring migration (U.S. Fish and Wildlife Service 1986).

Harbor seal are widely distributed throughout all nearshore waters of southeast Alaska. They are common in bays and tidal flats near Kake.

Other marine resources in the Kake area include king, coho, sockeye, chum, and pink salmon, dungeness crab, halibut, cockles, and butter clams. Kuiu and Kupreanof islands include many salmon streams which provide spawning grounds for coho, sockeye, chum and pink salmon as well as an occasional steelhead stream. Some of the most productive aquatic environments in southeast lie on and above the continental shelf. Examples of animals usually found within the organically rich bottom sediments overlying the shelf are starfish and several species of crab. Dungeness crab are more common in the Kake area and are found closer to shore than other species of crab. In the waters above the shelf shrimp, bottom dwelling fish such as halibut, several species of rockfish and sablefish (blackcod) swim and feed. Adult salmon moving toward spawning streams and outmigrating juvenile salmon also pass through these waters. Coastal tide lands provide habitat for many different invertebrate species. Sea urchins and sea cucumbers are found in portions of the intertidal environment exposed at very low tides while mussels, chitons (gumboots), cockles and butter clams are found in habitats slightly above mean low water.

COMMUNITY PROFILE

Community History

Eighteenth century Russian explorers and colonizers entered Alaska from the west, constructing settlements in the Aleutian Chain and Kodiak Islands as they moved eastward. In 1795 they established their first outpost in southeast Alaska in Tlingit territory at Yakutat. In 1799 they established a major settlement, a base for the Russian American Company, at Sitka on the west coast of Baranof Island.

Russian efforts to colonize southeast Alaska were primarily aimed at expanding their control of the sea otter trade. The Russian occupation of southeast Alaska had a limited influence on the Tlingit largely because the Russians were unable to pacify them outside of Sitka (Langdon 1983).

Alaska was purchased from Russia by the United States in 1867 and from that date to 1884 the U.S. presence in southeast Alaska was essentially a military one. First the Army then the Navy governed until the Organic Act, passed by the U.S. Congress in 1884, provided for the establishment of civil government in Alaska.

The status of the Tlingit and other Alaska Natives was not clearly specified in the Alaska Purchase treaty. In the years immediately following the American Purchase, the Tlingit continued to live as if their aboriginal property rights were unaffected. They had not sold any land to the Russians or Americans and in general felt that they were merely allowing the use of their territory. This resulted in several confrontations between the Kake Tlingit and the Russian and American military administration and culminated in the eventual bombing of three Kake villages in 1869.

The first clash began in 1803, when the Kakes, historically considered hostile and aggressive, initiated one of the first attacks against the Russians who were hunting sea otters in Keku strait along the eastern shore of north Kuiu Island. Only a few Russians escaped, and Baranof, head of the Russian American Company, retaliated by burning the villages and food supplies on Kupreanof and Kuiu islands (Krause 1956 [1885]).

A second confrontation took place in the mid 1800s when a group of Kake and Stikine Tlingit, employed in the hop fields of the Puget Sound area, threatened white settlers in the area and were fired on by an American Warship. A chief of the Kakes was killed in this encounter. To avenge that killing, a large group of heavily armed Kake Tlingit travelled to Washington Territory in 1857 and killed the customs inspector in Port Townsend (Krause 1956, Scidmore 1885, Rabich Campbell 1988).

The 1869 bombing of the Kake villages occurred after the Kake Tlingit demanded payment from the Army for the killing of two Kake men by a soldier. When the payment was not made, the Tlingit, in keeping with their traditions, took the lives of two prospectors (Price 1988, Krause 1956). In retaliation, the army bombed three Kake villages, located in Saginaw Bay, Security Bay and on Kupreanof Island. Houses, supplies and canoes were destroyed, but no lives were lost. The use of the gunboat in southeast Alaska has been recognized by some historians as the basis for the eventual adjustment of the Tlingit to early American occupation, because by 1880, the Tlingit had ceased protesting white occupation with violence (Stanley 1965, Price 1988).

The early history of the town of Kake on Kupreanof Island begins in the early 1700s when ancestors of the Kake people paddled north from the Long Island area (near present Ketchikan) through Rocky Pass, to escape a disease epidemic, possibly smallpox. These people eventually built a fort at Cathedral Falls in Hamilton Bay, near present-day Kake. A few years later, according to stories still told in Kake, an old man left the Hamilton Bay village and built a house at the present site of Kake. Seals were abundant and a fish stream, good water and a nice beach were found in the immediate area. Eventually the rest of the Hamilton Bay people followed him and settled permanently at the present site of Kake.

The origin of the name "Kake" is unknown and has been translated as having several meanings, but key respondents say the name means "town that never sleeps" referring to the need for the warlike Kake to be always on their guard for retaliation. Another translation is "Black bird (cormorant 'yook') on the rock". It has been speculated that possibly the name Kake refers to a lake or geographic feature where the Kake tribe lived long before their migration to the Kupreanof Island site.

The site of Kake on Kupreanof Island was one of many villages occupied by Kake Tlingit during the late 1700s and throughout the 1800s. Sites of permanent and seasonal settlements in the area included Security, Saginaw and Tebenkoff bays and Port Camden on Kuiu Island, in Rocky Pass and Hamilton Bay on Northern Kupreanof Island, in Pybus and Gambier bays on Admiralty Island and on the mainland at Port Houghton.

During the 1800s the village of Kake on Kupreanof Island gradually became the focal point for people from surrounding villages to gather in the fall and winter. During the latter part of October, residents of other permanent village sites would visit and barter, young people would meet and court each other and trappers would move in and out of town trading furs. In the spring, people returned to their own villages for several months of fishing, hunting, berry picking, and plant gathering.

Many changes occurred during the 1890s and early turn of the century to create a more centralized population at Kake. The period of 1880-1915 brought a territorial government, missionary activity, economic innovations and an larger white population into Tlingit territory. During the late 1890s Quaker missionaries founded a school in Kake which was later taken over by the Presbyterians. Ernest Kerberger, an early Kake merchant and fur buyer, started a saltery which later was converted to a cannery. The cannery in turn hired local people to fish on cannery-owned boats, process fish, and log for, build, and man large floating fish traps.

In approximately 1905, a government school was built in Kake and Native children were required to attend. This resulted in the abandonment of several permanent village sites on Admiralty Island, Kuiu Island and the mainland, although they continued to be used in the summer as fish camps. During land claims hearings in the 1940s it was said that compulsory schooling was the main reason the Kake Tlingit left their former village sites.

In 1914, the Department of the Interior, Bureau of Education, intent on concentrating the southeast Alaska Natives into a handful of permanent villages, made an attempt to consolidate the town of Kake with the town of Klawock by having Kake residents move to Klawock. The people of Kake refused, saying that they had long standing ties to the land (Beattie, 1914).

To protect their land and subsistence rights, the Kake Tlingit, in 1914, requested that the Bureau of Education create a reserve for their exclusive use. Reacting to this initiative the U. S. Forest Service recommended a smaller reservation, but the Kake people declined to accept these smaller boundaries, feeling that "the reservation proposed by the Forest Department is just large enough to give outsiders the chance to call them 'Reservation Indians' and not large enough to do them any good" (Beck, 1916). The land reserve was never created, and by the 1920s the town of Kake had became self-governing with a mayor and police chief. In 1952 Kake became incorporated as a first class city.

Clan History

The Kake Tlingit are composed of at least eight clans, each belonging to one of two moieties, Wolf/Eagle and Raven. Each clan owned geographic areas which included winter and summer camps, salmon streams, deer hunting areas, berry patches, and bays for seal hunting and other marine resource harvesting. Additionally, crests, house and family names, songs and origin stories were owned by each clan (Oberg 1973, Rabich-Campbell 1988.)

The Tsaguedi, Washinedi, Cankukedi and Sitkwedi clans belong to the Wolf/Eagle moiety. The Tsaguedi of Kake had early ties to the southern Tlingit but migrated north to mix with the Hootznahu at Hood Bay. Because of a subsequent feud they moved again to join the Kake Tlingit (Emmons n.d. in Rabich Campbell 1988).

The Washinedi came down the Stikine River and joined the Kakes (Emmons, n.d. in Rabich Campbell 1988) while the Nesadi also traveled down the Stikine River and settled on Prince of Wales Island with the Nexadi. According to Olsen (1967), a dispute later arose and the Nesadi moved to Kupreanof Island while the Nexadi moved south.

The Cankukedi are either from St. Phillips Island, north of Klawock, or a place called Caya near Kake (Olsen, 1967, Swanton 1905, in Rabich Campbell 1988). Rabich Campbell proposes that both may be true, as they probably migrated from the south to the vicinity of Kake. Believed to be one of the oldest clans, the Sitkwedi were said to be living on the coast when the Tlingit first arrived (Swanton 1905, Olson 1967).

The clans of the Raven tribe include the Qatcadi, Tanedi, Qaltcanedi and Saqtenedi. The Qatcadi originally lived at Kake and then moved to Baranof Island "at the time of the flood" and then finally to Pybus Bay on Admiralty Island (Olson 1967, Swanton 1970). Several other origin stories are told about the Qatcadi as members of this clan are found not only among the Kakes but also the Stikine Tlingit and among the Tahltan Indians of Canada.

The Qaltcanedi claim to originate on south Prince of Wales Island and their reason for migrating to the Kakes is unknown (Emmons n.d. in Rabich Campbell 1988). The Saqtenedi were part of the Kalkwedih who originally lived in the vicinity of the town of Kake on Kupreanof Island. They took their name from a creek, Saqtchin or "grass grown stream", located south of Hamilton Bay. (Emmons n.d. in Rabich Campbell 1988). Although considered an old occupant of Kupreanof Island by Swanton (1905), the Tanedi clan is thought to be a recent arrival by Emmons who suggested that they were an off-shoot of the Saqtenedi clan (Rabich Campbell 1988). The Qatcadi are thought to have existed on Kupreanof for a long time as their own stories do not describe them arriving at the coast from the interior (Rabich Campbell 1988).

Population History

The Russians, mainly concerned with economic gain, made few attempts to enumerate the Native population in Alaska. However, censuses were taken and recorded on at least three different occasions during the period of Russian occupation (see Fig. 3).

In 1835, the Russian priest, Veniaminof, then stationed in Sitka, made a close estimate of the Tlingit population of southeastern Alaska. The "Kake village" (then only one of several occupied villages of the Kake people) numbered 200. In 1839 Sir Douglas James of the Hudson Bay Company conducted a general survey of both the Tlingit and Haida tribes of Alaska. He described the Kake people as living at several villages in the Kake Archipelago. In 1861, Lt. Wehrman of the Russian navy, but then in the employ of the Russian American Company, compiled a census of the Tlingit by settlements. At that time the inhabitants of Kake villages numbered 445.

No attempt was made by the U.S. Government to enumerate the people of Alaska at the decennial census of 1870, three years after the purchase of Alaska from the Russians, but in 1880 the Superintendent of Census designated special agents to canvass the territory and census the population as best they could, considering the difficult terrain. The result of this effort was an actual count of all accessible settlements. This enumeration was supplemented by estimates based for the most part on the records and personal knowledge of the missionary priests for those regions which could not be visited in person by the special agents.

The 1880 enumeration of the Kake people totalled 568 and included inhabitants of several villages located on Kupreanof Island, Kuiu Island along Seymour canal, and Port Houghton on the mainland.

The subsequent 1890 census shows a decrease in population that may be attributed to several causes. It is highly probable that not all of the Kake villages enumerated in the 1880 census were counted in the 1990 census. Second, diseases such as tuberculosis, syphilis, measles, and smallpox were prevalent at that time and caused population numbers to drop. Miner W. Bruce who conducted the census in 1890 in the portion of southeast Alaska that includes Kake reported that many natives were not enumerated because they were hunting in the mountains or fishing, working at the salmon canneries in British Columbia, or hop picking in the state of Washington (Rollins 1978).

Information about the 1900 census came from Rogers (1960). Again, probably only one Kake village site was counted which accounts for the low census for that year and, once again, people may have been gone from the village on hunting and fishing trips. By 1910, the site of Kake village on Kupreanof Island, where it is presently located today, had became the primary residence of the Kake people and that location and population was counted as representing Kake in the censuses taken thereafter. Since 1950 Kake has shown a steady increase in population from 376 people (1950) to 555 people (1980). The Alaska Department of Labor reports a 1985 Kake population estimate of 634 (ADL 1987) (Fig. 3).

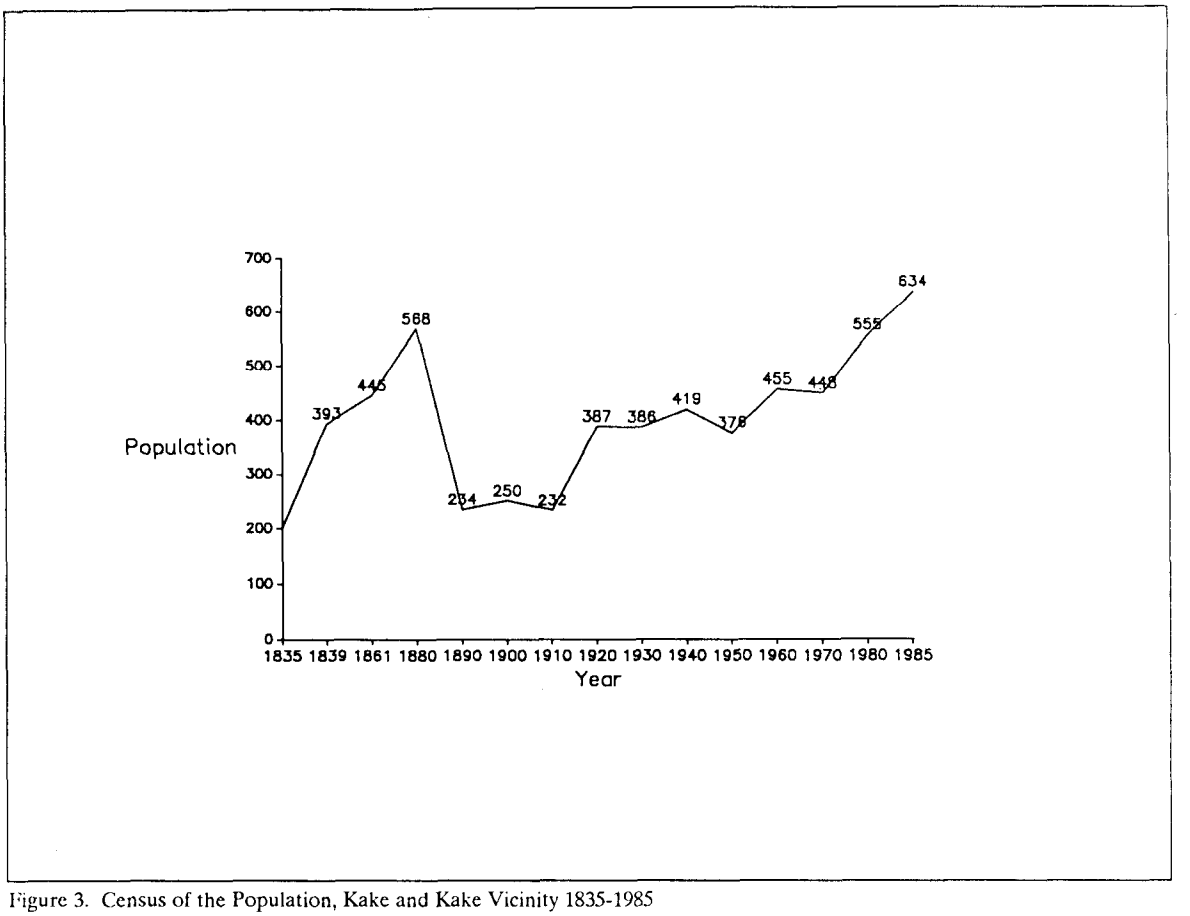


Figure 3. Census of the Population, Kake and Kake Vicinity 1835-1985

Demographics of the Sample Population

The survey conducted for this report identified 210 households in the Kake area including houses both inside and outside city limits. Demographic information on the sample population participating in the 1986 random survey is summarized in Table 3 and discussed below. The 70 sampled households were comprised of 256 household members with an average size of 3.7 people per household. Figure 4 shows the number of people in each of the sampled households. Of these 256 people, 187 (73 percent) were Tlingit, 57 (22 percent) were non-Native, two (0.8 percent) were Haida, and one (0.4 percent) each were Eskimo and non-Alaskan Native American.

Fortyone (59 percent) of the households were comprised of all Native occupants, while 19 households (27 percent) had all non-Native occupants. Mixed households with Native and non-Native occupants made up 13 percent of the sample or nine households (Table 3).

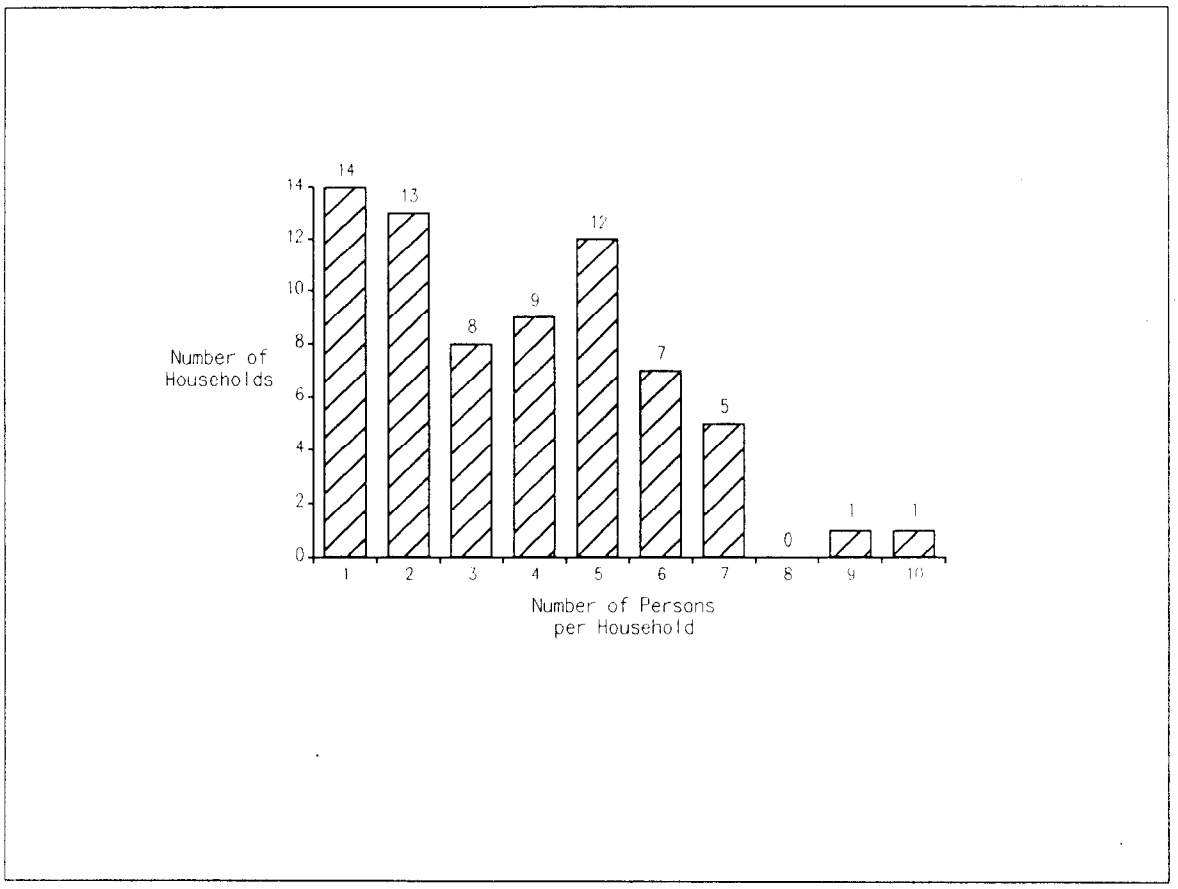


Figure 4. Size of Sampled Households, Kake 1986

Figure 5 shows the number of years the longest residing member of each household had spent in Kake as of 1986. Fourteen percent of the households had a member who had resided in Kake four years or less. This relatively high percentage of short term residents may possibly be attributed to the increased logging operation by Kake Tribal Corporation from 1981 through 1986 which brought many temporary employees to Kake.

Eighty percent of the households in the sample contained a person who had resided in Kake for 10 years or more, while 72 percent of the households had a member who had resided in Kake for 20 years or more. The average length of residency was 19 years for the longest residing member of a household (Fig. 5).

Table 3. Demographic Profile of Kake Sample Population

Number of Households Surveyed	Number of Household Members	Mean Household Size	Mean Residency in Years	Median and (mean) Age
70	256	3.66	19	27(29)

Number of Households With:

Native Occupants	Non-Native Occupants	Native and Non-Native Occupants
41 (59%)	19 (27%)	9 (13%)

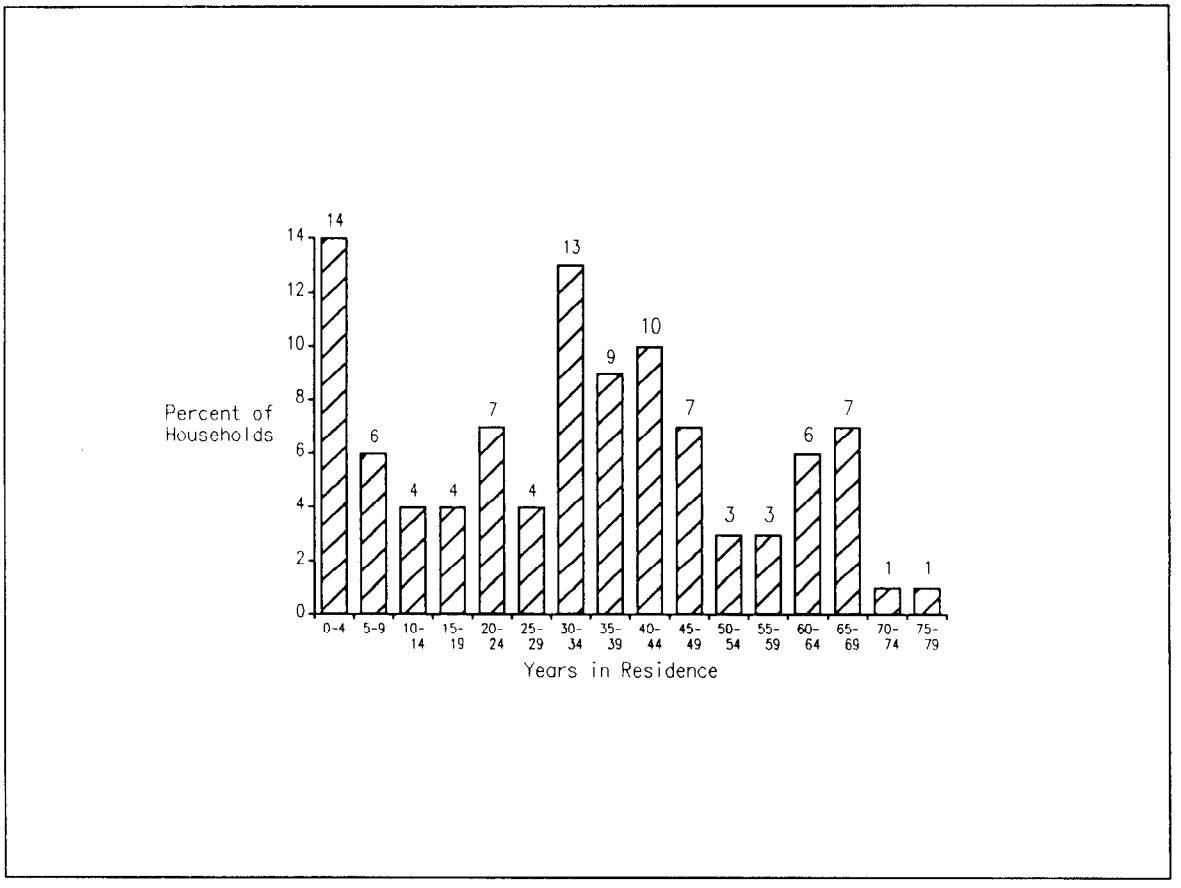


Figure 5. Years of Residency in Kake of Longest Residing Household Member, Kake 1986

A total of 135 males and 116 females appeared in the sample (Fig. 6). Ages ranged from less than one year to 107 years (Fig. 6), with a median age of 27 years and a mean age of 28.7 years (Table 3).

Community Services and Facilities

Kake was incorporated as a first class city in 1952. A six member city council, presided over by the mayor, governs the city. An appointed five member planning and zoning commission advises the mayor and council with respect to land use and development matters.

The mayor acts as the chief executive officer of the municipality, and is assisted in administration of the city's functions by a full time city clerk, two book keepers, and a part time planner. In 1986 the city also employed a temporary consultant who served as adviser on construction projects and acted as the Gunnak Creek Hatchery administrator. The city has assumed the following statutory powers: street maintenance, sewers and sewage treatment, cemeteries, police protection and jail facilities, fire protection service and facilities, water, transportation systems, community centers, libraries, recreation facilities, airport and aviation facilities, garbage and solids disposal.

Fire and Police Services

In 1986 the Kake Police Department consisted of a full time police chief and two deputies equipped with two patrol cars. The Police Department had its offices and jail facilities in the new Public Safety building. Part time jailers and a part time police dispatcher were also employed. In addition to the City Police Department, the State Department of Public Safety, through a contract with Tlingit and Haida Central Council, provided a village Public Safety Officer in Kake.

The Kake Volunteer Fire Department was housed in the new Public Safety Building. The fire department was equipped with a new, 1000 gallon pumper truck, an older 250 gallon pumper, and an emergency van. Several of the volunteer fire fighters were also trained emergency medical technicians.

Health Services

Health care was provided at a new health clinic operated by the Southeast Regional Health Corporation. Services provided by the community health practitioner include prenatal and well baby care, immunizations, nutrition counseling, health education, tuberculosis and venereal disease control, home health care, suturing, and vision/hearing screening. The practitioner also administered medicines and performed some laboratory tests. A physician, nurse practitioner, public health nurse and dentist made occasional visits to Kake. Native patients requiring further treatment were usually taken to the Mt. Edgecombe Public Health Service Hospital in Sitka, while non-Natives usually went to Juneau or Petersburg.

Transportation

Kake is accessible to other southeast communities by sea and air. In 1986 the Alaska Marine Highway ferry system serviced Kake once a week northbound and once a week southbound. There was a monthly barge service during the summer months which was reduced to once every six to eight weeks in the winter. Fuel arrived monthly by barge from Sitka.

In 1986 a large new public dock was almost completed for freight handling. This new facility brought the number of docks in Kake to four, including the city dock, cold storage, and cannery docks.

Privately owned small boats and larger fishing boats were also used by residents to travel to Petersburg, Sitka, and Juneau. This method of transportation was generally limited to the summer months due to rough seas during winter. The small boat harbor, about a mile outside the city limits, had space for 105 boats and could accommodate boats up to 60 feet in length.

In 1986, air passenger service to Kake consisted of 12 flights per week by Channel Flying Service of Juneau and six flights per week on Alaska Island Air from Petersburg. Previous to 1986, the only access to Kake by air was with float-equipped aircraft. This presented numerous problems. The float dock, with its steep gangway at low tide, made access difficult for community elders and people

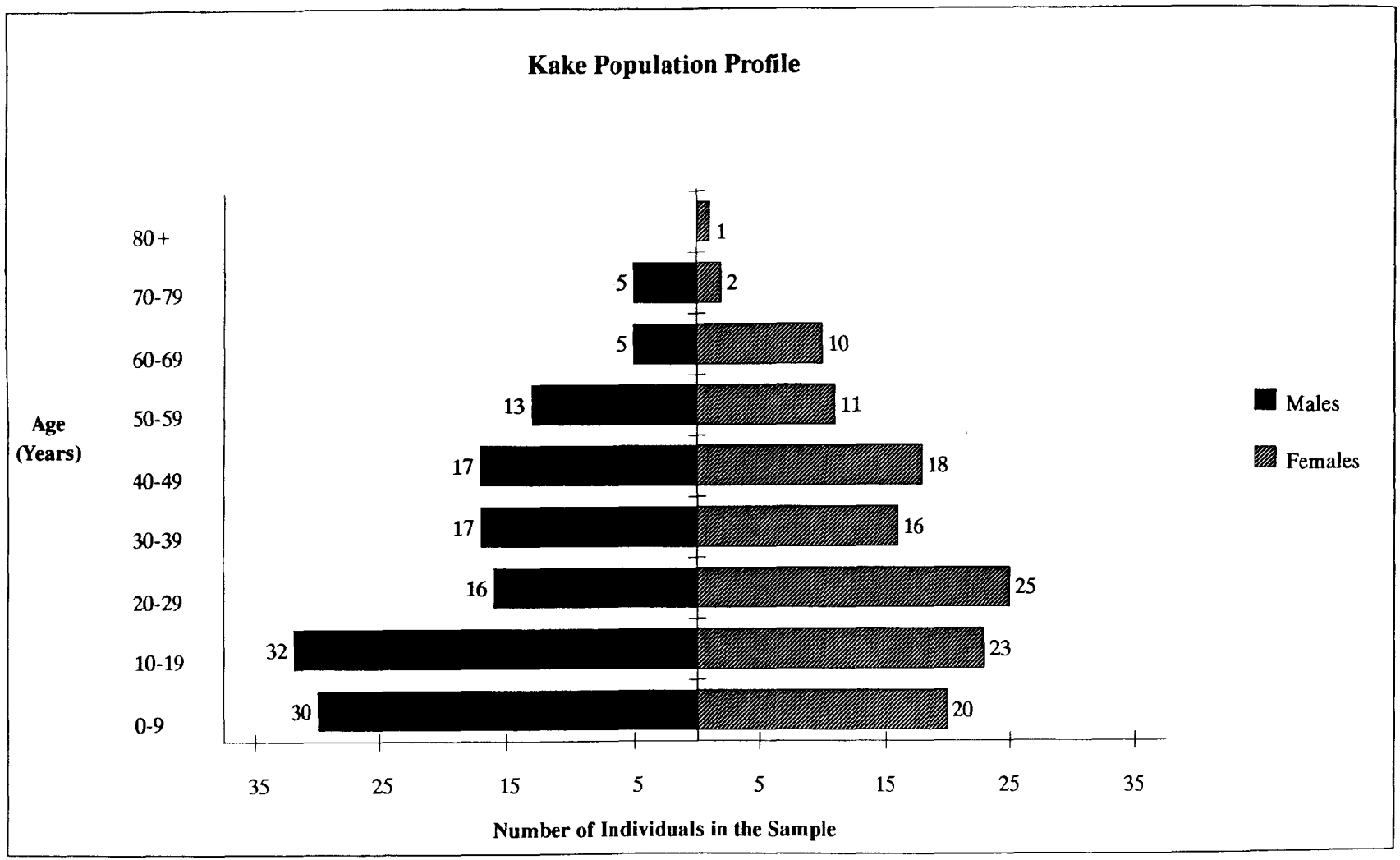


Figure 6. Population Profile, Kake Survey Sample, 1986

with heavy parcels. Windy conditions with rough water and below-freezing temperatures caused floats to ice up and hindered the frequency of service seaplanes were able to provide the community. Emergency medical evacuations were also restricted due to lack of an adequate landing area. An airport with a parking area and 3000-foot runway were completed in November of 1986, providing Kake with more reliable air service and allowing a wider range of aircraft to service the passenger, emergency, and freight needs of the area. As a result of improved landing conditions, in 1987 Wings of Alaska began making three flights a day from Juneau to Kake.

Housing, Schools and Utilities

Housing in Kake consisted of both owner-financed housing and government-financed housing. The majority of houses were frame construction with a few mobile homes or trailers. Over half the housing units were constructed before 1970, of which 25 percent were constructed before 1939. Of the remaining housing, 47 percent were built between 1970 and 1980 (Quadra 1984:43). In 1973 and 1974, 55 homes were constructed by the Tlingit and Haida Housing Authority, and in 1982 an apartment building containing 12 units of senior citizen housing was added.

Approximately 100 students each were enrolled in Kake Elementary School (grades K-6) and Kake High School (grades 7-12). A five member school board comprised the policy making body in the community.

Power generation, transmission and distribution in Kake was provided by the Tlingit and Haida Regional Electrical Authority, through the use of diesel powered generators. Kake's water supply comes from Gunnak Creek. Water from a dam located 2400 feet above Gunnak Creek Hatchery is pumped up to treatment and storage facilities. Drinking water was chlorinated, fluoridated and stored in two holding tanks. Water availability from Gunnak Creek could become a problem as the needs of Gunnak Creek Hatchery stocks and other aquatic resources compete with the city's expanding water service to new areas.

CHAPTER THREE

THE KAKE ECONOMY: CASH SECTOR

As is true in most towns in southeast Alaska, Kake has a mixed, subsistence-cash economy. In a mixed economy such as this, wild resource production is supplemented and supported by cash employment. In Kake, employment is in commercial fishing, government, construction, some private business, and other small-scale economic endeavors. Household economic strategies often involve investing a portion of their earned money into hunting, fishing and other resource harvesting to produce a portion of their family's food supply. Often this is the only feasible economic strategy because many opportunities to earn cash are limited and unstable, usually fluctuating seasonally. This chapter discusses the cash employment sector of the Kake economy while the subsistence sector is described in Chapter Four.

HISTORY OF ECONOMIC DEVELOPMENT

In the early 1900s, as the village on Kupreanof Island became the main permanent year round residence of the Kake Tlingit, commercial development in the area began to expand and opportunities for wage earning increased. Commercial fishing, fur farming and trapping, and logging became the primary means of cash income in Kake. This section discusses the development of each of these industries.

Commercial Fishing

The commercial fishing industry has provided a fairly stable cash economy for many southeast Alaska villages for a number of years. Cannery work comprised a large portion of wage employment in the commercial fishing industry. Kake people had traditionally been active in seasonal fishing.

Seasonal cannery work in most cases was integrated into their annual pattern of hunting, fishing and gathering.

In the late 1800s and early 1900s several salmon canneries and salteries were established by outside corporate interests in the vicinity of Kake in bays on Kupreanof, Kuiu, Admiralty and Baranof islands. Early canneries were built in Pillar Bay, at the village of Kake, and at Saginaw, Pybus and Washington bays. Tyee had a whaling station first, but a cannery was built in 1919 which operated into the late 1940s and 1950s.

The first salmon cannery in the immediate Kake area appeared in Pillar Bay in 1890. In the spring, people from Kake who were living in their cabins and camps in Port Camden walked to the head of Pillar Bay where they kept skiffs, and they boated to the Pillar Bay Cannery to work. The cannery operated for only a couple of years before a fire destroyed it. A salmon saltery, second cannery, and herring reduction plant also operated in Pillar Bay from the early 1900s through the 1940s.

These canneries provided a variety of employment to the residents of Kake village. People were employed to work in the canneries, cut logs for and build fish traps, operate and repair the traps, and fish on cannery-owned boats.

Many people also fished on their own boats or crewed on privately owned boats and sold fish to the various canneries. According to key respondents, some seiners from Kake would sell to the cannery in Pybus Bay. Port Alexander was once a busy commercial fishing center where Kake residents also sold their fish. Many people from Kake owned houses in Port Alexander in the 1920s, 1930s and 1940s. Fish packers from Ketchikan came to Port Alexander during these years to buy fish from Kake trollers.

Knowledgable long-time residents in Kake also talk about the old trolling camps that were established in the bays on Kuiu and Admiralty islands. People would go out to trolling camps in rowboats up until the middle 1940s. Whole families built small houses or erected wall tents to live in. Fish packers would go through camps and buy fish and take them back to the cannery at Tyee. One

Kake resident remembers his camp at Tyee had a garden and he dug a cellar under the house to keep vegetables cool. He would troll from Port Alexander all the way up Chatham strait.

Prior to 1900, sockeye and king salmon were the main species processed by the canneries. After the turn of the century, fishermen began using seine gear which targeted pink salmon. Pinks then became the primary fish packed by canneries in southeast Alaska. Eventually, because of the development of cold storage operations, the outlawing of fish traps, low yields, fishing restrictions, and a market preferring whole fish over canned, most canneries were unable to continue. The smaller, more isolated, and less modern ones were all forced to close at about the same time, during the early 1960s.

In addition to salmon, a herring fishery was developed in Chatham Strait, during the 1920s and 1930s. During this time herring salteries and oil and meal reduction plants were built in many bays along the Strait. The herring oil was used to make paint while fish meal was sold largely for fertilizer. Residents of Kake occasionally worked in the herring reduction plants, although no boats from Kake participated in the fishery, as they were too small.

Local people also sold clams to the Kake cannery to supplement their cash incomes. One man remembers being let out from school when he was a boy during the 1920s to dig clams and sell them for 75 cents a bushel.

There were several boat builders in Kake and some were employed to construct boats for the cannery fleets. As one person describes it, "... You have to be very careful. If you don't cut it right you can ruin the plank. Those people that didn't go to school, they were able to figure out how those plankings were cut. They figured out how a fishing boat was put together. Where they learned it, I can not figure out. The first boat I owned, the Hazel S. was made by Native boat builders at the Pybus Bay Cannery."

Kake Cannery

The cannery in Kake changed owners several times after its establishment in the early 1900s, though all owners were from outside Alaska. Finally in 1950, the village of Kake borrowed funds from

the BIA through the Indian Reorganization Act Revolving Loan fund to purchase the Kake Cannery and associated fishing boats and fish traps. The cannery continued to employ local people until 1979 when it shut down. This was due to a number of factors: declining salmon runs, lack of operating money, and its failure to modernize and respond to a changing market that preferred frozen to canned salmon.

Price (1988) discusses a controversy that occurred at the Kake Cannery in 1959 over the use of fish traps when the newly-formed state of Alaska first began to prohibit them. The village of Kake had made plans for the 1959 fishing season on the basis of the then current law which permitted fish traps. Under the terms of the loan contract with the BIA, up to 25 percent of the net profits of a canning season may be allocated to the native villages for improvement projects. Kake needed money to buy water pipe and for other essential services. In 1959 the state seized a fish trap at Kake and arrested the president of the Kake Village IRA Council and the foreman of the trap crew. One Kake key respondent who was working on the trap remembers that the state troopers came onto the trap with their guns drawn. Following this, the village of Kake was allowed to continue the use of their traps until 1962 when the U.S. Supreme court ruled that the state had the right to outlaw fish traps.

Kake Fishing Fleet

After World War II the Kake fishing fleet began a period of gradual modernization and incorporation of new technology. By the time fish traps were outlawed, much of the Kake fishing fleet had become modernized with larger boats, radar, sonar, power blocks and other technology. These improvements allowed boats to locate fish more easily than before, harvest a larger catch and travel during times when they would otherwise have sought shelter.

Initially, the Kake IRA Council owned most of the larger fishing boats and chose Kake residents as skippers and crew. As loans became available from the BIA, people borrowed money and began to buy boats. Some Kake fishers crewed on their neighbor's boats while saving money to buy their own. When the limited entry permit system was established in 1975, Kake Tribal, the Kake profit-making Village Corporation, provided financial assistance to individuals to ensure that the permits

from retiring fishermen would remain in the community. These seine permits, and others held by Kake residents, have contributed to the stability of the seine fishery and fishing fleet in Kake.

Figure 7 shows the limited entry salmon permits held by Kake residents from 1975 to 1986. Ownership of power troll and drift gill net permits remained relatively stable during this 10 year period; the number of power troll permits fluctuated from two to five while drift gillnet permits went from zero to two. Purse seine permits show a small decline from 17 to 11 permits. In contrast, the number of hand trollers increased from 84 in 1977 to 118 in 1979 and then dropped to 88 in 1980 stabilizing at around 80 permits during the first half of the 1980s.

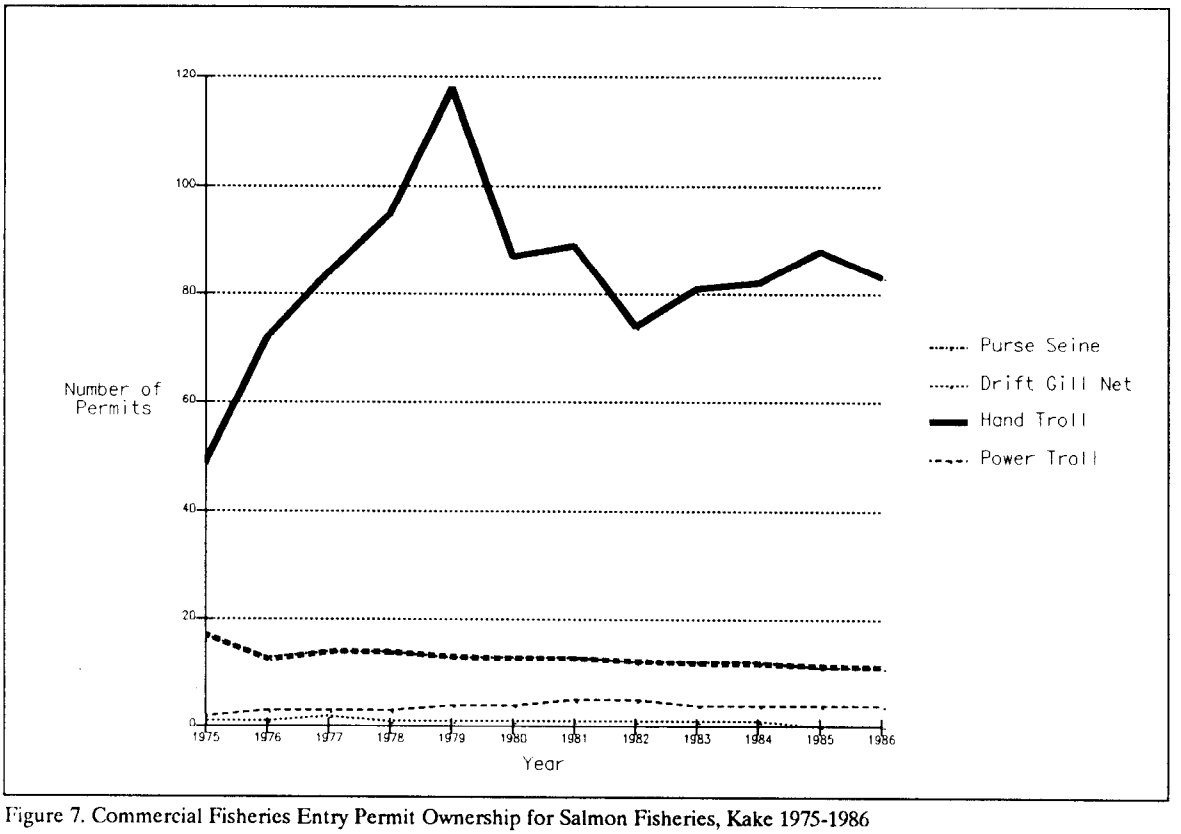


Figure 7. Commercial Fisheries Entry Permit Ownership for Salmon Fisheries, Kake 1975-1986

This fluctuation in the number of hand trollers may be due to several reasons. In the late 1970s the Commercial Fisheries Entry commission began considering a limited entry fishery for hand trollers, and in 1978 it held hearings in Angoon, Hoonah, Juneau, Ketchikan, Petersburg, Sitka and Wrangell to discuss the possibility. The hearings were well publicized and more people may have

become active in the hand troll fishery to qualify for points in case the fishery did become limited (Muir 1988). According to the 1978 CFEC Annual Report the hand troll fishery in southeast Alaska experienced rapid growth in 1977 and 1978 with the number of hand troll permits issued in Southeast increasing from 2950 in 1977 to 3910 in 1978. 1979 was the last year to participate in the hand troll fishery without a permit and it was also a year when fish prices rose considerably. This coincides with the sharp rise in the number of hand troll permits in Kake in 1979 (Fig. 7).

Hand troll became a limited entry fishery in 1980 and that same year that there was a sharp decrease in the number of hand troll permits held by Kake residents (Fig. 7). This may have been because some Kake residents did not have enough points to qualify for limited entry permits or did not think they would qualify and so failed to apply for a hand troll permit (George and Bosworth 1988). The decline in the number of hand troll permits in the early 1980s also was coincident with the start-up of Kake tribal logging in 1981, which provided jobs for many local people and may have removed them from commercial fishing for a few years. Because of their involvement in logging, people may have failed to renew their permits. Three years is the time limit allowed for permit renewal, after which they are lost.

Table 4 shows the number of permits issued to Kake residents in the various fisheries from 1975 to 1986. It again illustrates the increase and decrease in the salmon handtroll fishery and the slight decline of the purse seine fishery. It also shows the growth of the halibut fishery in Kake. The number of longline halibut permits for vessels less than five tons increased from nine in 1975 to a high of 61 in 1979, gradually stabilizing at about 50 permits in 1984. In recent years Kake residents have acquired a few permits in the sablefish (3 permits in 1986), crab (8 permits in 1986), finfish (8 permits in 1986) and shrimp fisheries (3 permits in 1986)(Table 4). These additional permits are generally held by the captains of the large seine boats, who fish for several species during a year.

The number of permits with earnings and the average earnings per permit in the salmon troll, salmon purse seine, halibut long line (<5 tons), halibut longline (>5 tons) and other fisheries, from 1975-1984 is shown in Table 5.

Table 4. Limited Entry Permits Held by Kake Residents, 1975 to 1986

Fishery	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Statewide Halibut Handtroll	0	0	1	2	3	2	1	1	1	4	2	3
Statewide Halibut Longline Under 5 Tons	9	24	36	43	61	45	54	51	55	50	49	49
Statewide Halibut Jig	0	0	0	0	0	0	1	1	3	2	2	3
Statewide Halibut Longline Over 5 Tons	15	20	20	16	13	18	19	17	17	17	14	16
Northern Southeast Sablefish Longline 5 Tons	0	0	0	0	0	0	0	0	0	0	0	1
Statewide Sablefish Longline Over 5 Tons	0	1	1	0	1	2	1	0	0	0	1	2
Statewide Dungeness Crab Pot Gear 50 Ft.	0	0	2	2	2	1	3	3	3	5	6	7
Southeastern Herring Purse Seine	0	0	0	0	0	0	1	0	0	0	0	0
Southeast King Crab Pot Gear to 50 Ft.	0	0	1	0	0	0	2	1	2	2	0	0
Southeast All King and Tanner Crab Pots	0	0	0	0	0	0	0	0	0	0	1	1
Statewide Misc. Finfish Set Gill Net	0	0	0	0	0	0	1	0	0	0	0	0
Statewide Misc. Fishfish Hand Troll	0	0	0	0	0	0	0	0	0	0	0	1
Statewide Misc. Finfish Longline 5 Tons	0	0	0	1	0	0	1	0	0	0	3	4
Statewide Misc. Finfish Otter Trawl	0	0	1	0	0	0	1	0	0	0	0	0
Statewide Misc. Finfish Jig	0	0	0	0	0	2	7	1	1	1	1	1
Statewide Misc. Finfish Longline 5 Tons	0	0	0	0	0	0	2	0	0	1	1	2
Statewide Shrimp Pots 50 Ft.	0	0	0	0	0	0	0	0	3	1	0	2
Statewide Shrimp Beam Trawl	0	0	0	0	0	0	0	0	0	0	0	1
Southeastern Salmon Purse Seine	17	13	14	14	13	13	13	12	12	12	11	11
Southeastern Salmon Drift Gill Net	0	0	0	0	0	0	1	1	1	1	0	0
Cook Inlet Salmon Drift Gill Net	0	0	1	0	0	0	0	0	0	0	0	0
Bristol Bay Salmon Drift Gill Net	1	1	1	1	1	1	0	0	0	0	0	0
Statewide Salmon Hand Troll	49	72	84	95	118	87	89	74	81	82	88	83
Statewide Salmon Power Gurdy Troll	2	3	3	3	4	4	5	5	4	4	4	4
Statewide Tanner Crab Pots 50 Ft.	0	0	0	0	0	0	1	1	1	1	0	0
Statewide Other Longline 5 Tons	0	0	0	0	0	0	1	0	0	0	0	0
Statewide Other Pots 50 Ft.	0	0	0	0	0	0	0	0	1	0	0	1
Statewide Other Longline 5 Tons	0	0	0	0	0	1	1	0	0	0	0	0

Table 5. Number of Permits Issued and Average Earnings from Commercial Salmon and Halibut Fisheries, Kake 1975-1984

	Year									
Fishery	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Salmon	43	65	73	90	104	90	81	65	55	55
	$2,609	$2,536	$9,305	$7,075	$7,645	$5,276	$8,241	$9,472	$9,869	$12,100
Halibut	13	17	36	44	63	40	61	45	52	50
	$1,311	$672	$7,471	$6,894	$10,091	$3,751	$4,899	$5,040	$4,969	$3,041

Source: Adapted from CFEC 1987

Crab Cannery

A crab cannery was established in Kake in the late 1940s by an outside owner who trained local people to run it. The cannery changed hands twice more over the next three decades. Many local people were employed at the cannery, some of whom also fished for crab in Port Camden, Hamilton Bay and Big John Bay and supplied it to the cannery. In 1973 the cannery closed due to a dwindling supply of crab.

Timber Industry

The timber industry in Kake began on a small scale in the early 1900s when local residents harvested timber for regional cannery buildings, fish traps and local construction projects. High quality trees near the shoreline were selectively cut and hauled to the beach and towed to area sawmills. The closest mill to the townsite of Kake was to the north at Point White. Harvesting was not regulated at this time and anybody was able to cut timber. As one key respondent said, "logs were free to take in those days." Another key respondent remembers that in 1951 he and his father cut logs along the shoreline at the head of Pybus Bay and towed them to the Ketchikan Pulp Mill. These hand logging operations continued sporadically into the 1950s.

After the middle 1950s, pulp mills in Ketchikan and Sitka were established and bidding procedures were developed where individuals would bid on a contract to log National Forest land and

sell the timber to one of the mills. In the late 1950s, 1960s and early 1970s the shoreline areas were logged first since they were easily accessible. As road building technology and public funds appeared, larger inland areas were cut. Figures 8 and 9 show the location of early clearcuts on east Kuiu and southwest Kupreanof Islands.

Soderberg Logging Company established a camp in Kake in 1968. They conducted most of the logging on Kupreanof Island on National Forest land from the late 1960s to the early 1980s, and logged on Kake Tribal land from 1979 through 1982. Soderberg Logging Company built all of the roads on Kupreanof Island with the exception of the road from the boat harbor to Hamilton Bay. Three hundred and fifty million board feet (350 mmbf) of timber were harvested on Kupreanof Island during this time. Figures 8 and 9 show the approximate size and location of clearcuts and locations of roads on Kupreanof Island. Soderberg Logging Company primarily used a conventional high lead logging method and also logged with a balloon from 1974 through 1979 in experimental efforts to protect the Kake watershed.

During the 1960s and 1970s other timber harvest operations were taking place on Kuiu Island. Kake residents occasionally found employment in logging camps there, especially at the camp at Saginaw Bay.

In the beginning of the 1980s, as the market for timber declined and harvesting from public lands became less profitable, Soderberg Logging Company ceased its timber harvesting and began to build roads for Kake Tribal Corporation which was just beginning to log Corporation lands on northern Kupreanof Island. Kake Tribal Corporation logged 277 mmbf of timber from Corporation lands from 1982 to 1986, 10 mmbf in 1987, and 17 mmbf in 1988 from Sealaska lands. They expect their logging operations to continue at least through 1992. Kake Tribal Corporation sells logs to Japan and Korea and pulp to Alaska Pulp Corporation in Sitka. The 1988 harvest year was the first year that they also sold pulp to Canada. In the fall of 1986, the Soderberg Logging Company dismantled the camp in Kake and moved to Admiralty Island to build roads for Greens Creek Mining Co.

Direct impacts of this history of logging industry developments are evident in Kake, though many are more subtle than can be seen in some other communities. One major result was that since

1968 steady cash employment has been available near town, so many residents did not have to leave the community to find work. During this period, Kake's economy diversified, adding commercial logging to the commercial fishing industry. Soderberg Logging Company employed over 100 people at the height of business, of which about fifty percent were long-term local residents.

A few Kake residents were trained in various aspects of logging by Soderberg Logging Company. When Kake Tribal Corporation began its logging operations in 1981, these skilled local people found relatively high paying jobs with the Village Corporation. Although they employed some non-locals as mechanics or equipment operators, Kake Tribal Corporation made an effort to hire primarily corporation stockholders as laborers. As a result, many local residents saw increased incomes during this period (1982-1988). Kake experienced an increase in population from non-Native loggers moving in to work at the camp and from some former residents returning to Kake with the better work prospects. During the logging period Kake's population increased from 448 (1970) to 555 (1980) to 635 (1984), an increase of 41.7 percent in 14 years.

Stores, restaurants, laundromats, and rental units became established to handle the influx of outsiders. These businesses created cash employment for local residents and brought goods and services to town that had not been available before. As Soderberg Logging scaled down its operation on Kupreanof Island some of these businesses have failed.

Figure 8. Logging Roads, Logged Areas and Cutting Dates

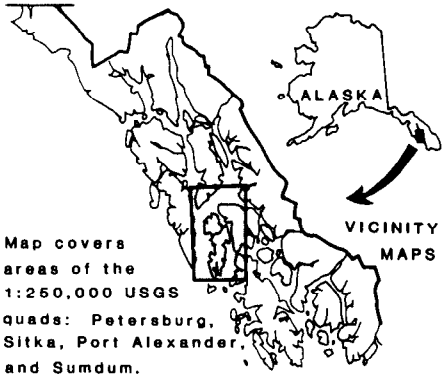
Logged Areas

67 Cutting Dates

Logging Roads

See INSET (Figure 9) for logging roads.

Road locations and clearcuts have been generalized at this scale from more detailed timber harvest maps. For greater accuracy refer to USFS and Kake Trial Corporation source maps.



Map covers areas of the 1:250,000 USGS quads: Petersburg, Sitka, Port Alexander, and Sumdum.

SOURCE

This map was compiled from USFS Timber Harvest maps, Petersburg District Office, Petersburg, Alaska and Kake Tribal Village Corporation Timber Harvest maps, Kake, Alaska.

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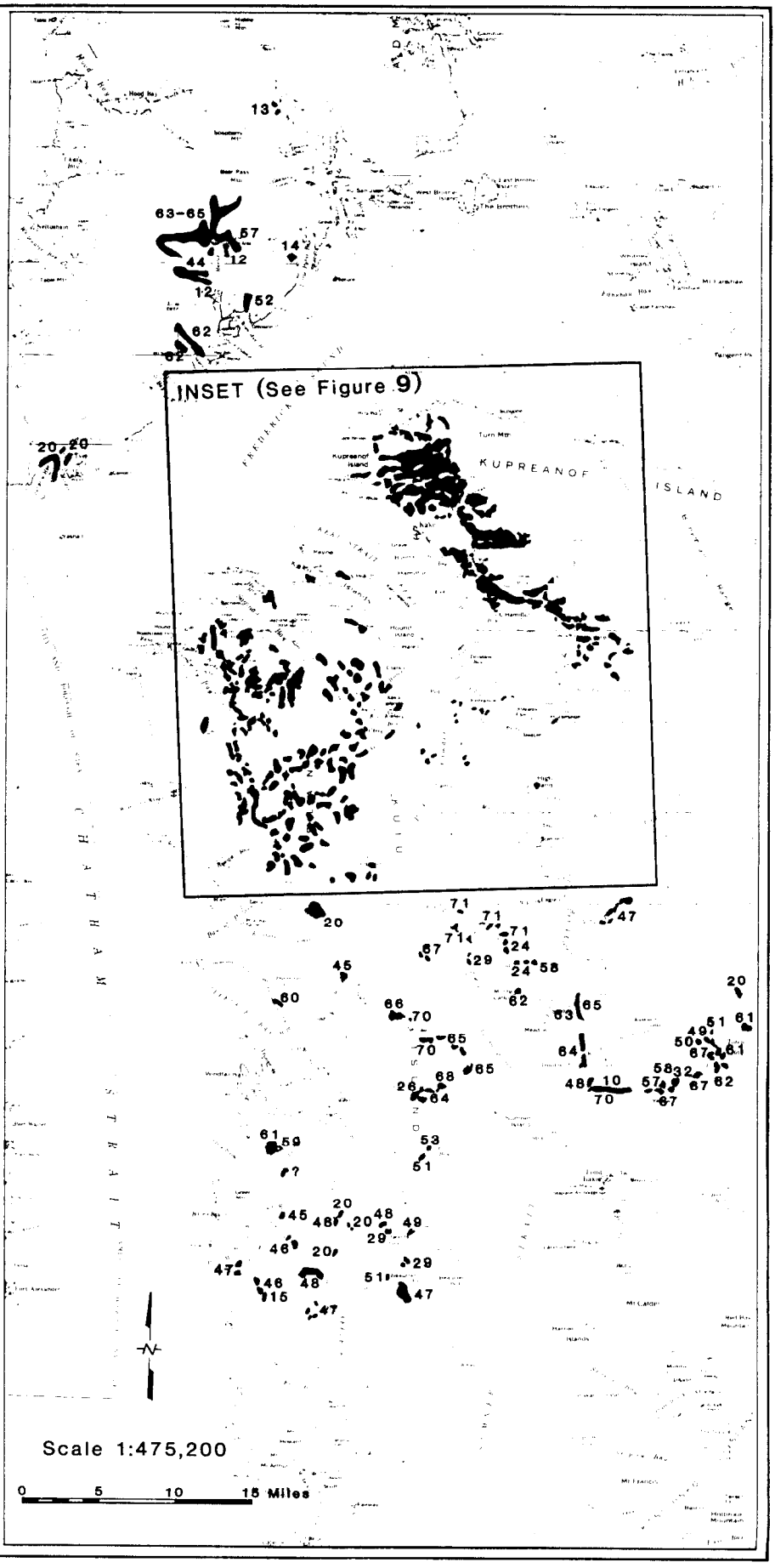


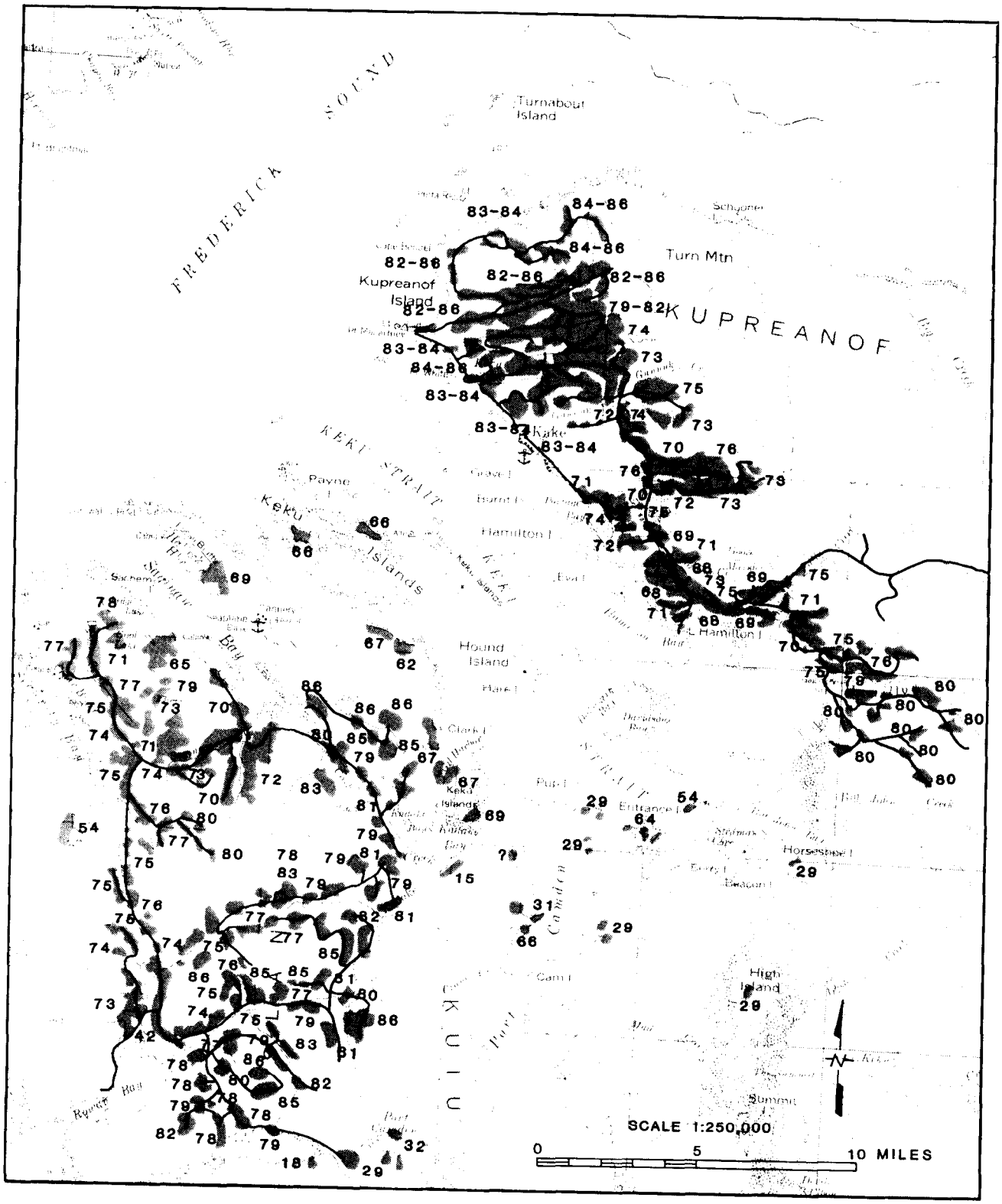


Figure 9. Inset for Logging Map: Logging Roads, Logged Areas and Harvest Dates

Fur Trade

The fur trade provided another source of cash income for some Kake residents, from the late 1800s through the early 1960s. Kake people hunted and trapped mink, river otter, and beaver in the bays and streams on Kuiu and Kupreanof islands. Furs were sold to a local merchant by the name of Kerberger who had arrived in Kake in the late 1800s from Pennsylvania. Kerberger was also reputed to have bought about 10,000 deer hides over several years, primarily from one Kake hunter who hunted deer with dogs. In later years, Kake trappers sold furs to buyers outside Kake.

Fox farms operated on the islands surrounding Kake from the 1920s through the early 1940s. Foxes ran free on the islands but were fed in pens. To harvest them, pen doors were closed during feeding. The Keku islands, Hound Island, and Turnabout Island were the sites of fox farms. Kake residents were employed to seine fish for fox feed as well as to work as hired hands. The fish that were used for fox food were dried in large smokehouses, or boiled in large iron kettles.

Many of the fox farms were owned by prominent southeast Alaska residents living outside Kake, including one well-known judge. During the days of Prohibition (1920-1933) some fox farms served as a cover for the illegal stills used to make bootleg whiskey.

One key respondent tells how some fox farm owners stole foxes from one another by rowing from island to island with flat bottomed boats full of bait. The foxes were tame and would jump into the skiff to eat while the thief rowed back to his own island. But, the key respondent says it all evened out in the end because fox stealing was often reciprocated. The industry eventually failed due to declining fur prices and disease among the animals.

According to Rogers (1960) trapping of furbearers continued after the fox farms were abandoned because, despite fluctuation in market prices, trapping was a traditional winter-time occupation that brought in some income to households. A 1948 survey of the sources of income of Indian families in Southeast Alaska indicated that on the average, 7.4 percent of total cash income came from fur sales (Rogers 1960). In the late 1950s and early 1960s trapping continued to decline as a source of cash income to people in Kake as fur prices declined and synthetic furs became preferred.

As one key respondent said, trapping in southeast required substantial effort, and there was not enough of a return to justify the activity.

WAGE AND OTHER EMPLOYMENT IN 1985-86

The sources of cash earnings in 1985-86 can be seen from the systematic survey of 70 households (see methodology). Figure 10 represents the employment profile for those households. Most jobs were found in public sector government employment, the fishing industry and in logging. Other sources were in retail-private business, investment-retirement, construction, and longshoring. Each of these are discussed below.

Public Sector Government Employment

In 1986 state, municipal, and federal government provided employment to 40 percent of the sampled households and was the largest source of income. State government included the school system which employed approximately 20 staff members including teachers, a principal, an accountant, a secretary, and janitorial staff. The State Department of Transportation also employed two people to inspect the airport construction.

A mayor, three clerks, one part-time planner, a part-time magistrate, a police chief, three police officers, one Village Public Safety Officer, two part-time jailers, a dispatcher and two garbage collectors comprise the main city jobs. The city also runs the liquor store and employs two part-time clerks. A couple of cooks are employed at the city-run senior center. Gunnuk Creek Hatchery whose private nonprofit permit is held by the city, employs two people year round and approximately 13 people seasonally. A health aide paid by the Southeast Alaska Regional Health Corporation (SEARHC) works out of the city-owned health clinic. SEARHC is a nonprofit organization that receives money from state and federal grants. The Tlingit and Haida Electrical Authority, a nonprofit cooperative under the Rural Electrification Administration, U.S. Department of Agriculture, runs the power plant in Kake which employs three to four people.

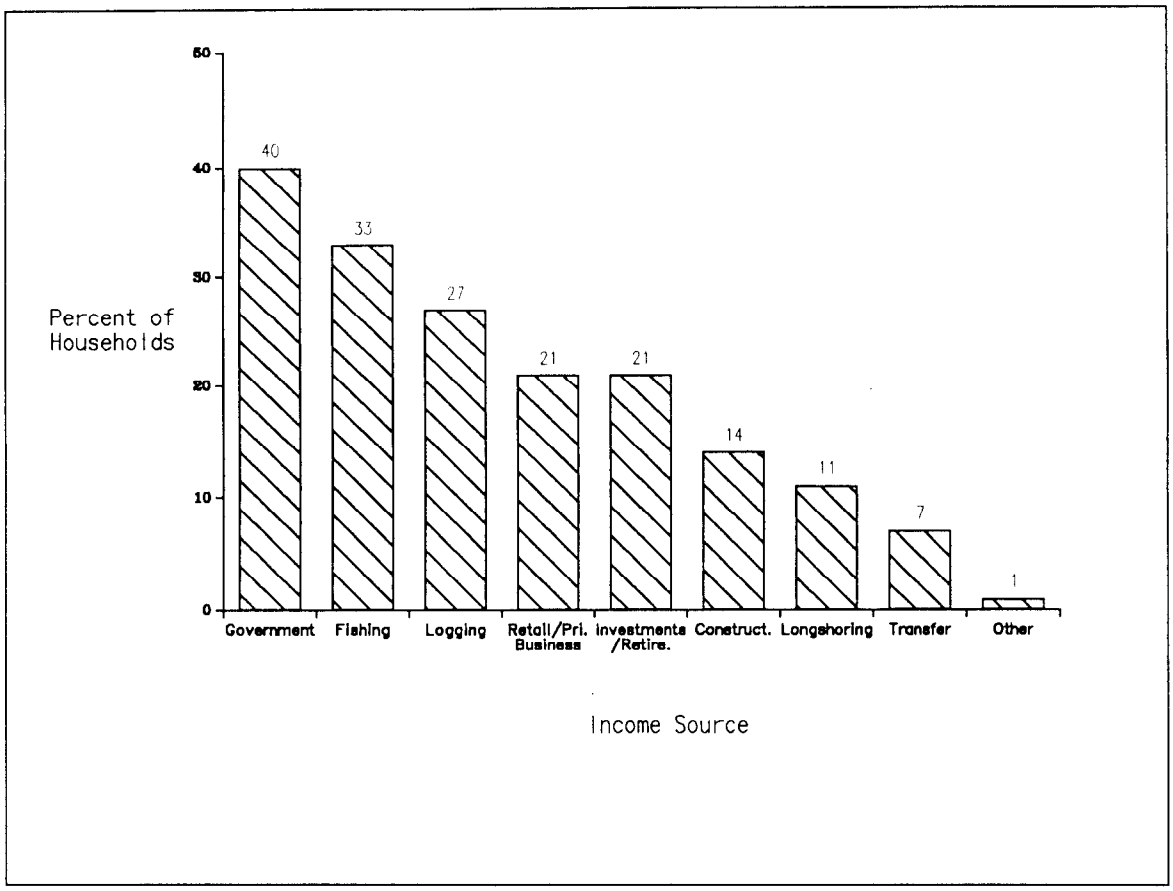


Figure 10. Sources of Employment Income, Kake 1986.

Timber Industry

Twenty-seven percent of Kake households reported income from logging in 1985. The local employment from logging was increased when Kake Tribal Corporation began their logging operation in the early 1980s. Before that time most timber harvesting in the area was accomplished by Soderberg Logging Company who hired at least 50 percent of their employees from outside Kake. Kake Tribal Corporation employs as many local residents as they can to run their logging operation. Some mechanics and a few key managers are hired from experienced, outside personnel, but Kake Tribal Corporation has been training their employees as mechanics and machine operators so that they are gradually assuming these positions.

Logging, like many other jobs in Kake, provides primarily seasonal employment. It is common to find loggers employed in several job categories over the course of a year. For example, many people take time out from logging to fish during the commercial openings.

Commercial Fishing and Processing

Thirty-three percent of Kake households reported some income from commercial fishing in 1985 and 1986. According to CFEC records, in 1985 there were 67 halibut permits (the majority of them longline) issued to residents of Kake, one sablefish permit, six dungeness crab permits, one combination king and tanner crab pot permit, five miscellaneous finfish permits (long line and jig), 11 salmon purse seine permits, 88 salmon handtroll permits, and four salmon power troll permits (Table 4). Table 6 shows the estimated gross earnings of Kake salmon and halibut fishermen for 1985. Estimated gross earnings for the halibut fishery for 1985 were $284,772. The purse seine salmon fishery brought in $726,653, while $124,090 was made by salmon handtrollers.

Table 4 indicates the minor changes in limited entry permits from 1985 to 1986. A few Kake residents have obtained new permits for long line sablefish, miscellaneous finfish handtroll, shrimp pot, shrimp beam trawl, and statewide other pots. Halibut, statewide sablefish, dungeness crab and finfish (longline) fisheries increased by one or two more permit holders. The biggest difference was in the handtroll permits which declined by five from 1985 to 1986.

The majority of people involved in commercial fishing in Kake are hand trollers (Table 4). According to key respondents, most of the hand trollers sell their fish to the Kake Cold Storage. Handtrolling on average provides a modest return to fishers, $2,231 mean gross earnings in 1985 (Table 6). The eight salmon purse seiners on average sold substantially more--$90,832 mean gross earnings in 1985 (Table 6). The seine fishers generally sell to processors in Petersburg. The halibut fleet usually sells to the Kake Tribal Corporation cold storage.

The cold storage employs 45 people at peak season. About nine of these employees were from out of town in 1986. There is a high employee turnover rate over the course of the processing season (about 100 people in 1985-86). The work is seasonal and corresponds to the openings for black cod,

herring, halibut, and salmon. According to the cold storage manager, fish are bought, processed, frozen and shipped to Seattle. Some of it continues on to the Japanese market.

Additional Income Sources

Transfer payments, longshoring, investments/retirement, construction and retail/private business were other sources of income for surveyed households. Seven percent of the households reported some income from transfer payments which included unemployment, food stamps, aid to dependent children, and disability.

Once or twice a month a Japanese log ship arrived in Kake and a few residents found two or three days of employment as longshoremen through Kake Tribal Corporation. Eleven percent of the households in the sample reported some income from longshoring. Twenty-one percent of the households reported some income from investments or retirement (Fig. 10). Included in this category were older residents of retirement age and people who own rental property.

Kake residents were occasionally hired by outside contractors to work temporarily on local construction projects. For example, an out-of-town contractor hired by the city to repair the large city dock where barges off-load employed a few local construction workers. During 1985 and 1986 several local people were hired by a contractor to help in the airport construction. Fourteen percent of the sampled households reported receiving some cash income from construction.

Retail and private businesses provided income for 21 percent of the households in the sample (Fig. 10). There were several small businesses in Kake in 1986. Three grocery/variety stores provide part-time work for several people as clerks and stock people. One restaurant in town employs a cook and a couple of waitresses. A couple of households ran tiny stores out of their homes selling pop, candy, and chips. Two households ran tire repair services out of their residences. One household sold crafts and knitting supplies. Two taxi services operated in Kake and employed four or five people as drivers and dispatchers. The only motel in Kake, the New Town Inn, was owned and operated by a local family. One person operated a small sawmill on a part time basis. During the summer of 1986 a

small gardening program, funded by a grant from the State, employed teenagers to help residents plant vegetable and flower gardens.

Table 6. Permits Fished, Harvest and Estimated Gross Earnings, 1985 Kake Commercial Fishery

Permit Fishery	Number of Permits Fished	Pounds Harvested	Estimated Gross Earnings 1985	Average Gross Earnings 1985
Halibut Longline <5 tons	42	114,235	$82,821	$1,972
Halibut Longline >5 tons	14	278,553	$201,951	$4,808
Salmon Purse Seine-Southeast	8	2,629,999	$726,653	$90,832
Salmon Hand Troll-Statewide	55	99,618	$122,725	$2,231

Seasonality of Employment

Figure 11 shows the number of months that adult (18 years and older) household members who held jobs (n=101) were employed from May 1985 to April 1986. Seventy-six percent of these jobholders worked less than 12 months during the year of the survey, reflecting high employment seasonality. Forty-five percent of the adult jobholders worked six months or less.

A report prepared for Tlingit and Haida Central Council in 1985 found that 54 percent of the people surveyed in Kake were unemployed at the time of the survey while 46 percent indicated that they were working. This high unemployment rate could be a reflection of the time of the year that the survey was done. During the winter months employment opportunities are generally fewer and the unemployment rate would be higher then. Again, this illustrates the seasonal nature of employment in Kake.

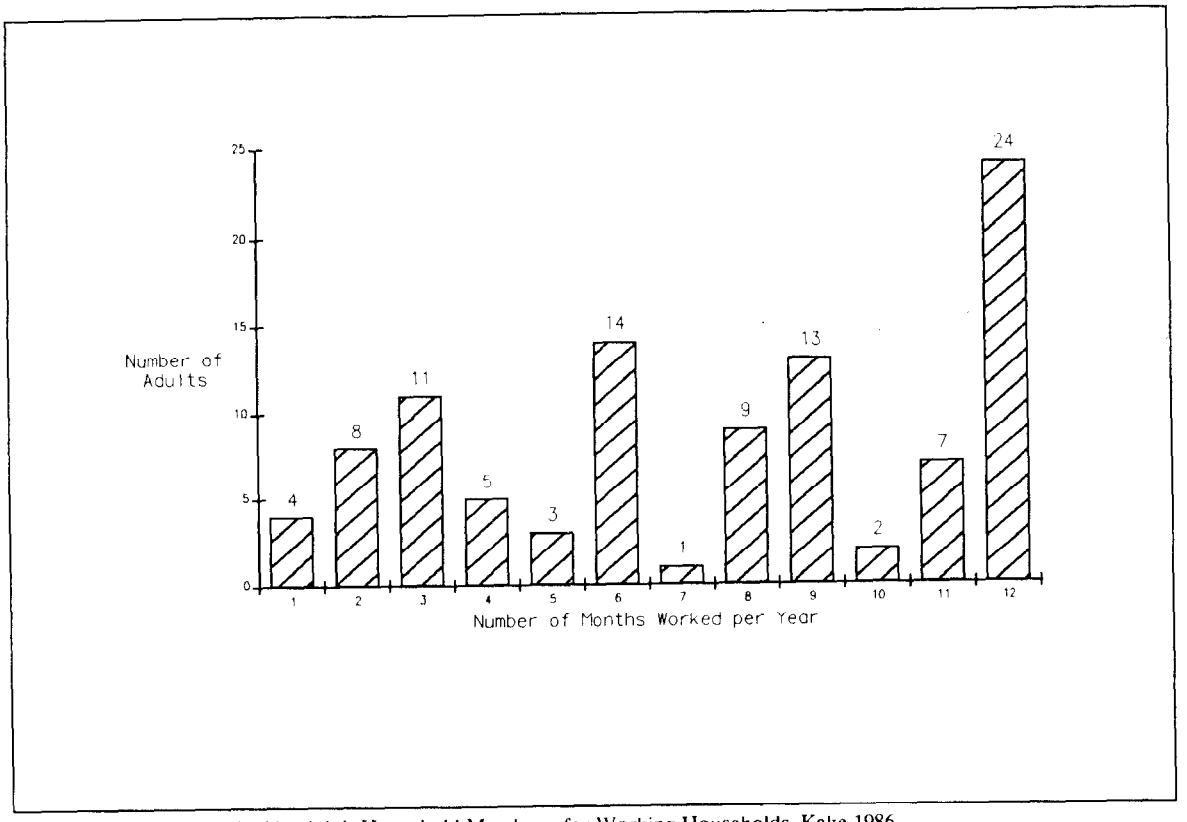


Figure 11. Months worked by Adult Household Members, for Working Households, Kake 1986

Income

Figure 12 shows the number of income sources for survey households. Fifty-nine percent of the households had two or more sources of income. Forty percent of the households had one source of income. Of the households with one income, ten households (14 percent) said that their total household income came from government employment. Five households (seven percent) said that their total household income came from logging, while another five households said that their total income came from investments and retirement. Four (six percent), three (four percent) and one (one percent) of the households reported 100 percent of their income came from transfer payments, construction and retail/private business respectively.

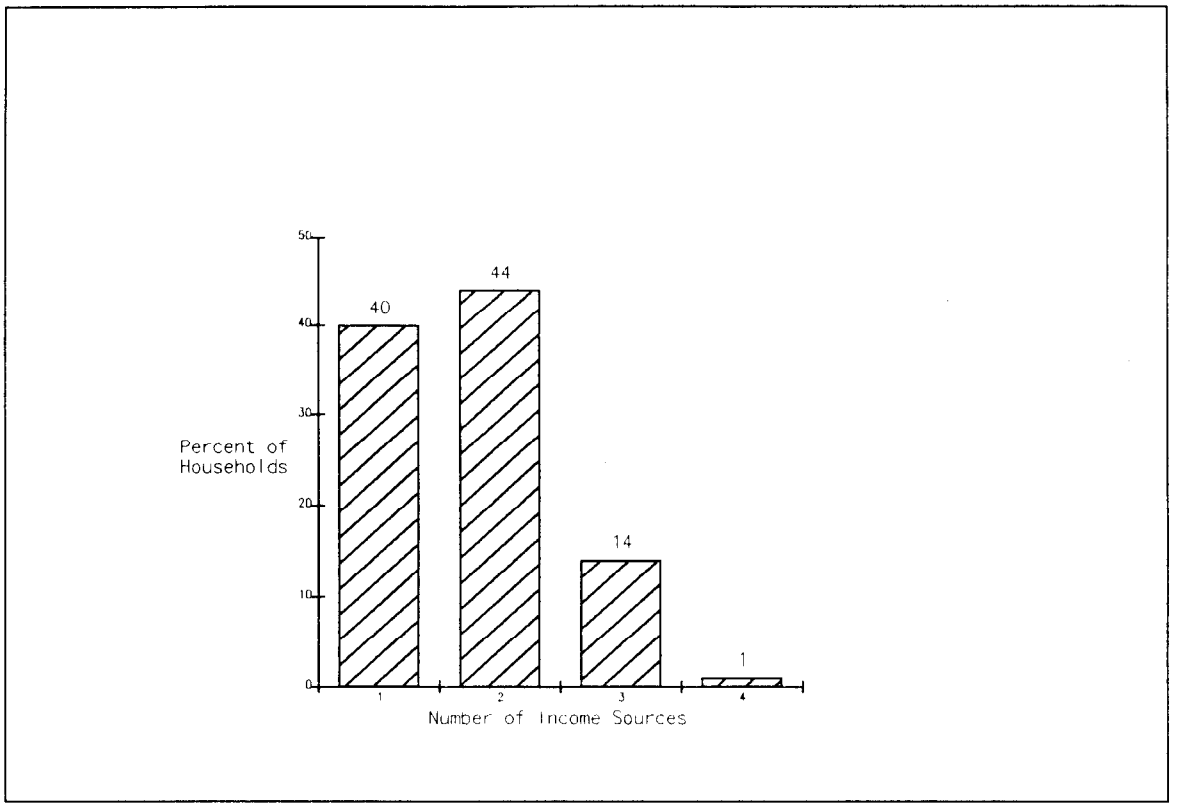


Figure 12. Number of Income Sources, Kake Households, 1986

Figure 13 shows the adjusted income of households in the survey. The adjusted income is all income for the household minus commercial fishing or other business expenses. The curve represented by Figure 12 has two peaks, one indicating that there is a segment of the community with low incomes in the $5,000-$10,000 range and a second peak in the $30,000-$40,000 range. This second peak at the higher income levels probably reflects households seasonally employed in Kake Tribal Corporation Logging which paid $12.00 per hour and up for work which lasted 9 to 11 months of the year for many positions. A good fishing season during 1985 also may have contributed to a greater percentage of the households being in these higher income brackets. Four of the surveyed households declined to answer the income question.

Four of the 66 households responding to the income question in the survey had incomes of $55,000 or greater. The high income categories include households employed by the school district,

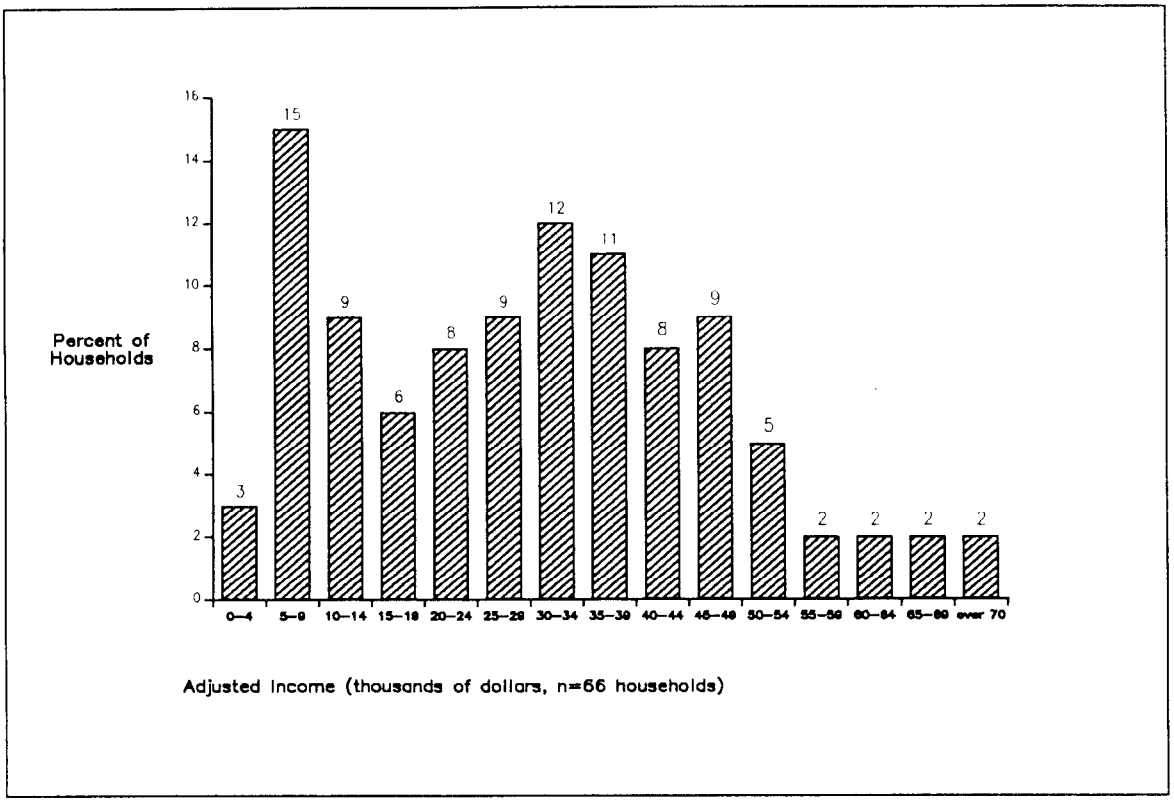


Figure 13. Adjusted Gross Incomes, Kake Households 1986

State Department of Transportation, and a household with a combination of logging and construction employment.

Figure 14 shows the mean taxable income (income remaining after fishing expenses and other deductions have been made) from 1982 income tax returns for several communities in southeast Alaska (Alaska Department of Revenue 1984). The mean taxable income for Kake was $15,902 as compared to Juneau with a mean taxable income of $23,388 (ADF&G, Subsistence Division 1987). There were 13 communities in Southeast Alaska with greater mean taxable incomes than Kake that year.

In summary, government, fishing, and logging provided the largest number of jobs for people in Kake during 1985 through 1986. Many of the jobs were seasonal with the exception of some government jobs which provide year-round employment. Seventy-six percent of the households worked less than 12 months during the year the survey was administered and the majority of the households had two or more sources of income.

Kake's economy was diverse for a town of its size, in the year of the study. In 1986 there was no apparent shortage of jobs. There was, nonetheless, some concern expressed by community leaders that once Kake Tribal Corporation slows down its logging operation there will be widespread unemployment. To help alleviate this situation, some people are urging expansion of the fishing industry, including the cold storage operation and Gunnuk Creek Hatchery. Discussion of expansion plans for the cold storage include the development of a cannery.

Because the hatchery in Kake is a private nonprofit operation, the area around the mouth of Gunnuk Creek is designated as a special harvest area. When someone agrees to fish for the hatchery, they are able to fish locally in the special harvest area and must return a percentage of their profit to the hatchery. In return, the hatchery can arrange for a tender from Petersburg to come to Kake and buy fish. As the hatchery grows and fish begin to return (1987 saw the first return of hatchery fish to Gunnuk Creek) not only will the hatchery need to employ more people, but opportunities for local fishermen to harvest and sell chum and pinks close to town will increase.

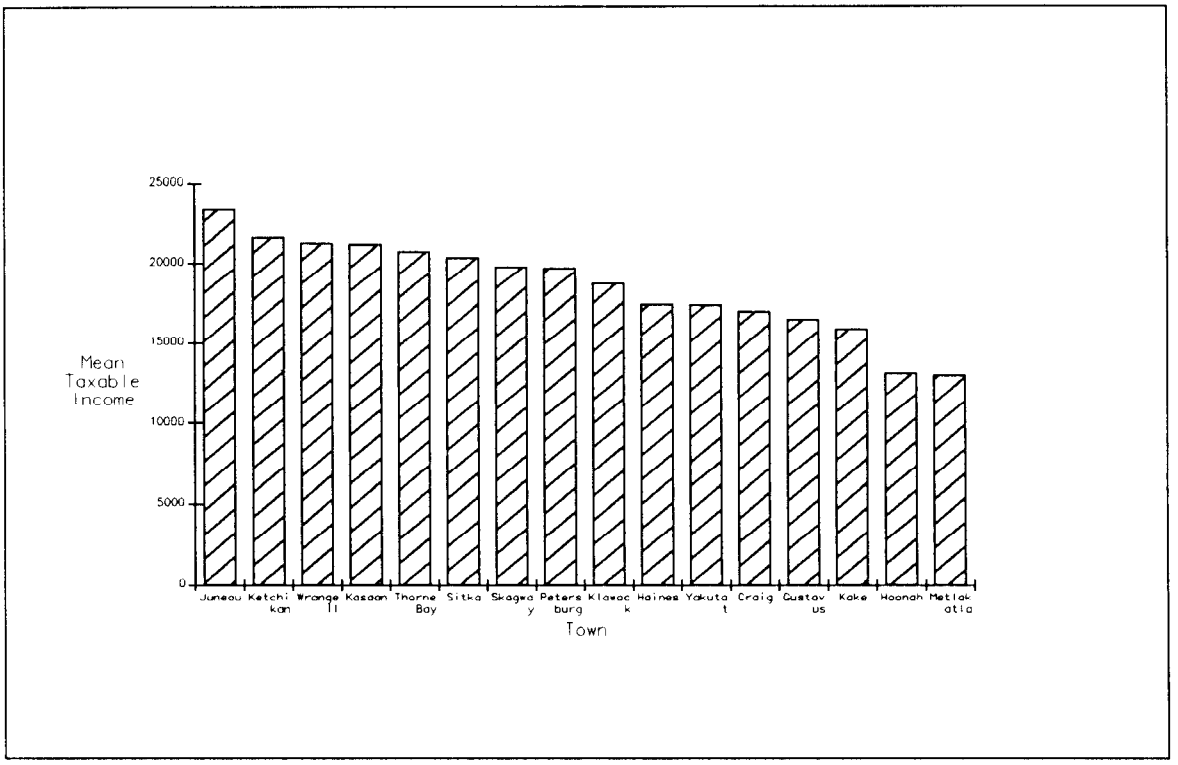


Figure 14. Mean Taxable Incomes Reported per Income Tax Return, 1982. (Source: Alaska Department of Revenue 1984).

CHAPTER FOUR

THE KAKE ECONOMY: SUBSISTENCE SECTOR

HISTORIC RESOURCE USE

The historic use of natural resources by the people of southeast Alaska has been described by several authors (Niblack 1890; Krause 1885; Newton and Moss 1893; Oberg 1973; deLaguna 1972). Halibut, salmon, berries, herbs, roots, bark, fish eggs, herring, invertebrates (sea urchins, gumboots, and sea cucumbers), various shellfish (clams, mussels, crab), seaweed, birds and bird eggs as well as both land and sea mammals were harvested. Historically, the Kake Tlingit utilized areas on the mainland, and on Admiralty, Baranof, Kuiu and Kupreanof islands. Goldschmidt and Haas (1946) interviewed residents of Kake to determine their land ownership claims and in doing so documented Kake peoples' use of the mainland, Admiralty, and Kuiu islands. Figure 15 shows the traditional harvesting territory of the Kake people, based on these interviews.

According to Goldschmidt and Haas, the Kake Tlingit probably claimed the mainland coast from Cape Fanshaw north to and including Windham Bay (Fig. 14). The Kake Tlingit used to hunt deer and fish in the streams in the Fanshaw Bay area. Chief Tom of Kake resided on a point inside Fanshaw Bay. To the north, in Port Houghton, salmon streams provided an abundance of fish which were dried at smoke houses located on the south coast of Port Houghton and on Robert Island. Some homes also were located on the north and south sides of Hobart Bay and these were owned by the same people who claimed Port Houghton. Hobart Bay was known as an area where people went from Kake and mainland villages to gather herring eggs, trap furbearers, and seine fish.

The east coast of Baranof Island from Red Bluff Bay south to Cape Ommaney was hunted and fished by both Kake and Angoon people. Goldschmidt and Haas also found that "...the Kake natives have utilized some territory on Admiralty Island from time immemorial." Kake people utilized Pybus Bay and Small Pybus Bay, while Chapin Bay was used jointly by people from Kake and Angoon. There was formerly a seasonal camp in Chapin Bay that was used for collecting herring and rendering oil.

Besides herring, this area yielded salmon, black seaweed, berries, clams, gumboots and crab. A few people presently living in Kake who were interviewed in 1986 claimed descendency from the Gambier Bay group, who in turn had connections with the Taku River (Douglas) people. They said that they and their relatives once seal hunted and fished and dried halibut at Gambier Bay during the spring. Reports contained in Goldschmidt and Haas (1946) and information from 1986 key respondent interviews point to the fact that Kake people acquired hunting and fishing rights to Gambier Bay through intermarriage.

Kuiu Island was used extensively by the Kake Tlingit. Saginaw Bay was the site of smokehouses, trolling camps, and hunting camps. Cornwallis Point just outside of Saginaw Bay was also a trolling camp.

A Kake witness interviewed by Goldschmidt and Haas had this to say about the use of Security Bay:

> It is an important bay for gathering food. They get dog salmon late in the fall. They get deer in season and pick blueberries, huckleberries and crabapples there. It is also a stopping place for the trollers at the mouth of Security Bay which has been used since olden days. This area is a good place to gather black seaweed and gumboots. On the coast southward from Security Bay is a trapping area. I trapped there last fall myself but did not get much.

In Washington Bay people made herring oil and trapped mink and land otter. The north arm of Pillar Bay was used for purse seining and trolling. There were fishing camps where cabins and gardens were established. Pillar Bay is the site of streams where people fished for sockeye, and where they harvested deer and collected gumboots. Kake people portaged overland from Pillar Bay to Port Camden where they fished, dried meat and chum salmon, hunted seal, and picked berries. The coast on both sides of Port Camden was also used for trapping.

There were cabins at Kadake Bay on Kuiu Island where people from Kake stayed while pink, chum, and coho salmon and steelhead were caught and smoked. According to key respondents some of these smoke houses have been remodeled and are still in use. The whole of Kadake Bay was used for trapping. One family had a house and garden on Keku Island across from Kadake Bay and there

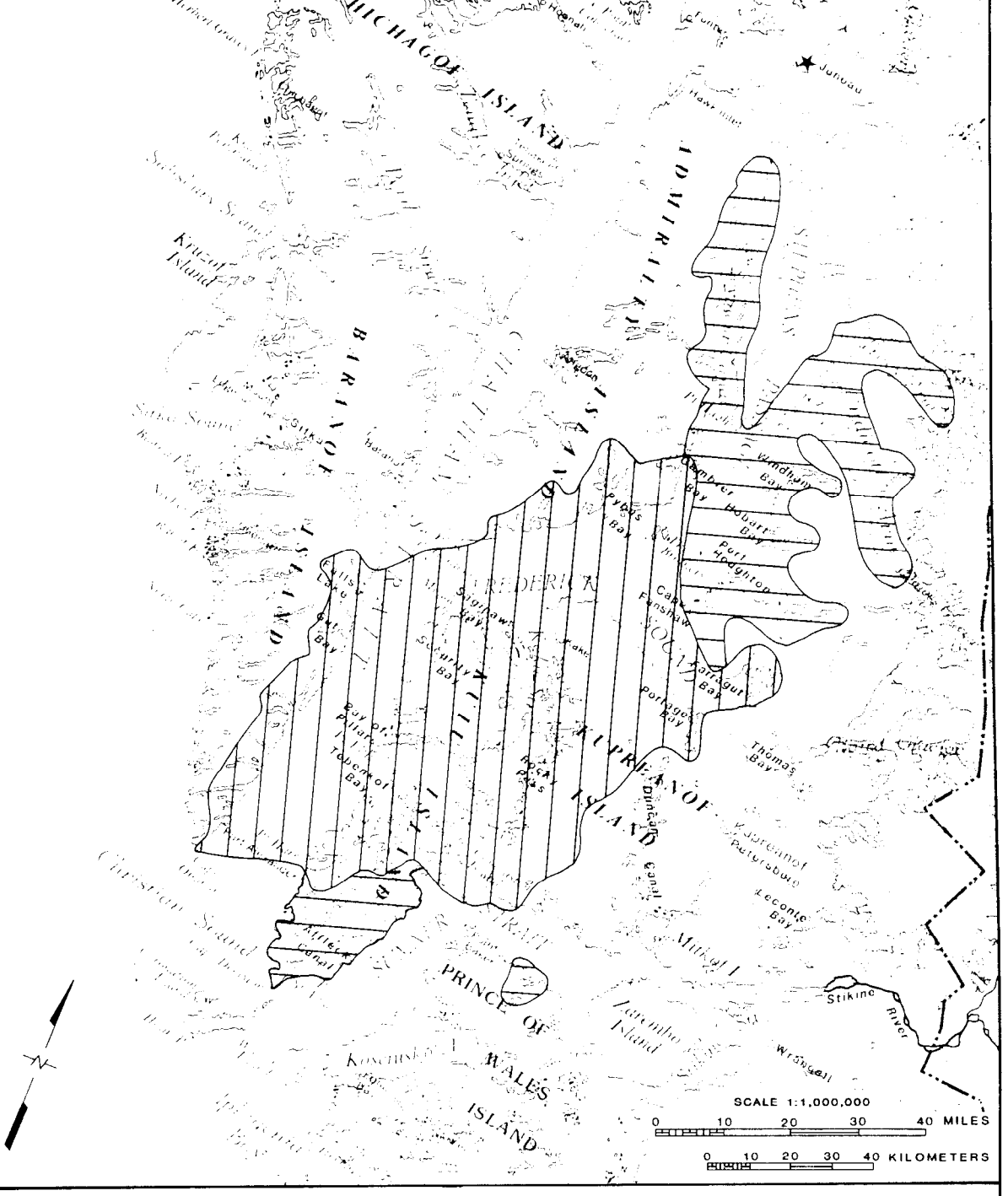
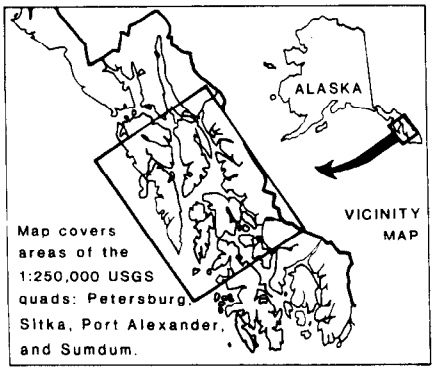


Figure 15. Traditional Territory of the Kake Tlingit, circa 1943.



Exclusive Claim Area

Joint Claim Area

SOURCE: Goldschmidt, W.A., and T.H. Haas 1946, Possessory Rights of the Natives of Southeast Alaska and Department of Interior 1944, Hearings on Claims of the Towns of Hydaburg, Klawock, and Kake, Alaska

STATE OF ALASKA
Department of Fish and Game
Subsistence Division

were many gardens on the Keku islands before they were used for fox farms. Kake people also hunted and fished and trapped in Tebenkoff Bay and around Port Malmesbury. Three Mile Arm was used for catching and smoking fish, trapping and gathering black seaweed, and hunting. Conclusion Island was owned and used by Kake people as well.

Kupreanof and Kuiu islands, Keku Strait, and Rocky Pass, the waterways that connect the two islands, have been especially important to the Kake people. Key respondents recollections of resource use on Kupreanof and Kuiu islands since the early 1900s are described below.

People used to walk the beaches on Kuiu Island and set traps for mink. Several families had land at Tebenkof Bay and trapped there. They maintained camps and set traplines with the use of small boats.

Subsistence fishing for halibut has traditionally taken place in Keku Strait. People used an old halibut hook on a line (hand jig) and old seal stomachs as buoy bags on the jig anchor line. Rocky Pass, the middle portion of Keku Strait, was the site of cabins used for fish camps in the summer and for trapping in the fall and winter. Deer hunting occurred in the Rocky Pass area also.

Herring and herring eggs were gathered in Port Camden, Hamilton Bay, and No Name Bay during the 1930s through the 1950s. An 8 to 14-foot long herring rake, used to impale the fish, was lowered into the water by a person in the bow of a skiff while another person rowed through the herring. Smoking and drying herring and rendering herring oil were the common methods of preparing herring products.

On Kupreanof Island, Kake people traditionally fished for salmon in Gunnak Creek. They clammed on the beaches around Kake and hunted deer behind the town. Shrimp were harvested around the nearby Keku Islands.

Several circumstances have led to considerable changes in the use of certain traditional areas by Kake residents. Trapping in the Rocky Pass area declined in the early 1960s as the value of furs dropped. Trapping cabins saw declining use after that. As people acquired larger boats, it became more difficult to navigate narrow Rocky Pass with its shallow water and strong tides. In the early

1980s, as Rocky Pass became more shallow due to uplift, the channel markers were removed by the Coast Guard, making further attempts at navigation risky through the area.

Some use of this area declined due to declining resource populations. Herring runs were depleted in Port Camden, Hamilton Bay, No Name Bay and in many other areas due to commercial enterprises. By the late 1960s these areas no longer supported viable salmon runs. The deer population declined drastically in the late 1960s and early 1970s on Kupreanof and Kuiu islands, probably due to a series of hard winters, wolf predation, and hunting pressure. In 1973 the deer season on Kupreanof and Kuiu islands was closed by state regulation and it remains closed today. Since that time, people have shifted to hunting deer and waterfowl on BAranof and Admiralty Island. Although many people still return to their fishing areas on Kuiu Island, they gradually stopped spending summers in fish camps. Instead, fish are brought home to smoke and can. These changes in land use in the Kake area, with particular references to changes in deer hunting patterns, are discussed later in this chapter.

CONTEMPORARY SUBSISTENCE USE

This section describes contemporary patterns of noncommercial fishing, hunting and gathering by Kake residents. This comprises the subsistence sector of Kake's economy. Information is presented on the seasonal round of subsistence activities, the geography of harvest activities, and the harvest and use of subsistence resources.

Seasonal Round of Harvesting Activity

Figure 16 presents the seasonal round of resource harvest activities during the 1980s by residents of Kake. This information is based on interviews with four active harvesters in three different age categories: two in their 30s, one in his 50s and one in his 70s. The seasonal round presents a generalized picture of current day community harvest activities. It is not meant to represent harvest by any particular individuals, nor does it necessarily reflect regulated hunting or fishing season openings and closures. The seasonal round chart shows the time of year when 58 types of subsistence resources

are harvested. Harvesting some intertidal species (cockles, dungeness crab, gumboots [chitons]), fishing (king salmon, halibut, red snapper and herring), seal hunting, and firewood gathering are activities that are continuous throughout the year.

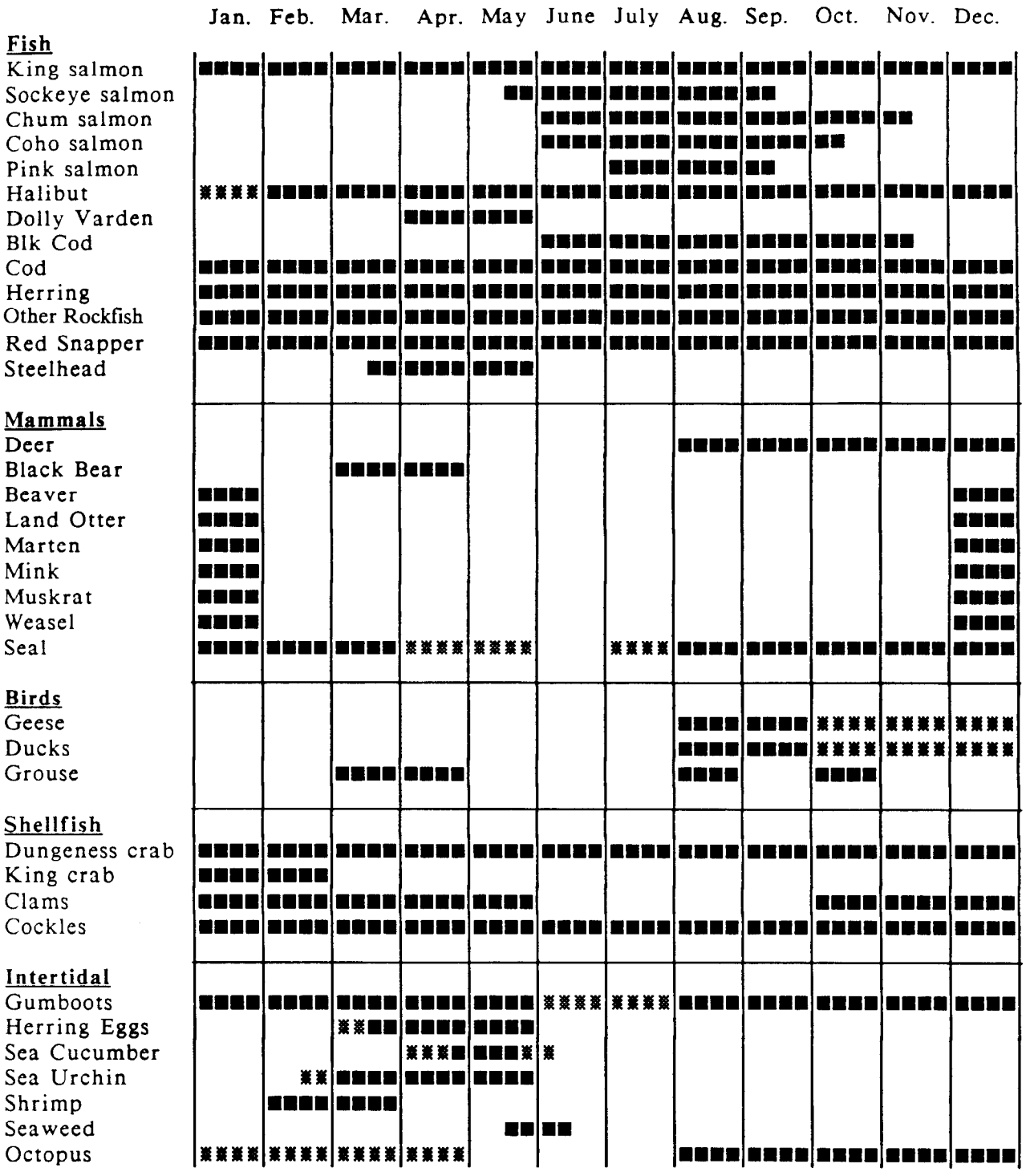
In the spring (March-May) Dolly Varden and steelhead trout are among the fish harvested. Many plants and intertidal resources are gathered at this time and an occasional black bear is killed. House logs are usually cut in the spring because they are easier to peel at that time.

The fishing effort increases in early summer and continues into the fall as the runs of salmon appear. Late summer is the berry picking season.

Although deer are the main resource harvested in the fall, some waterfowl hunting also occurs at this time. Activities that continue throughout the winter include deer hunting, king crab harvesting, some fishing and some fur trapping.

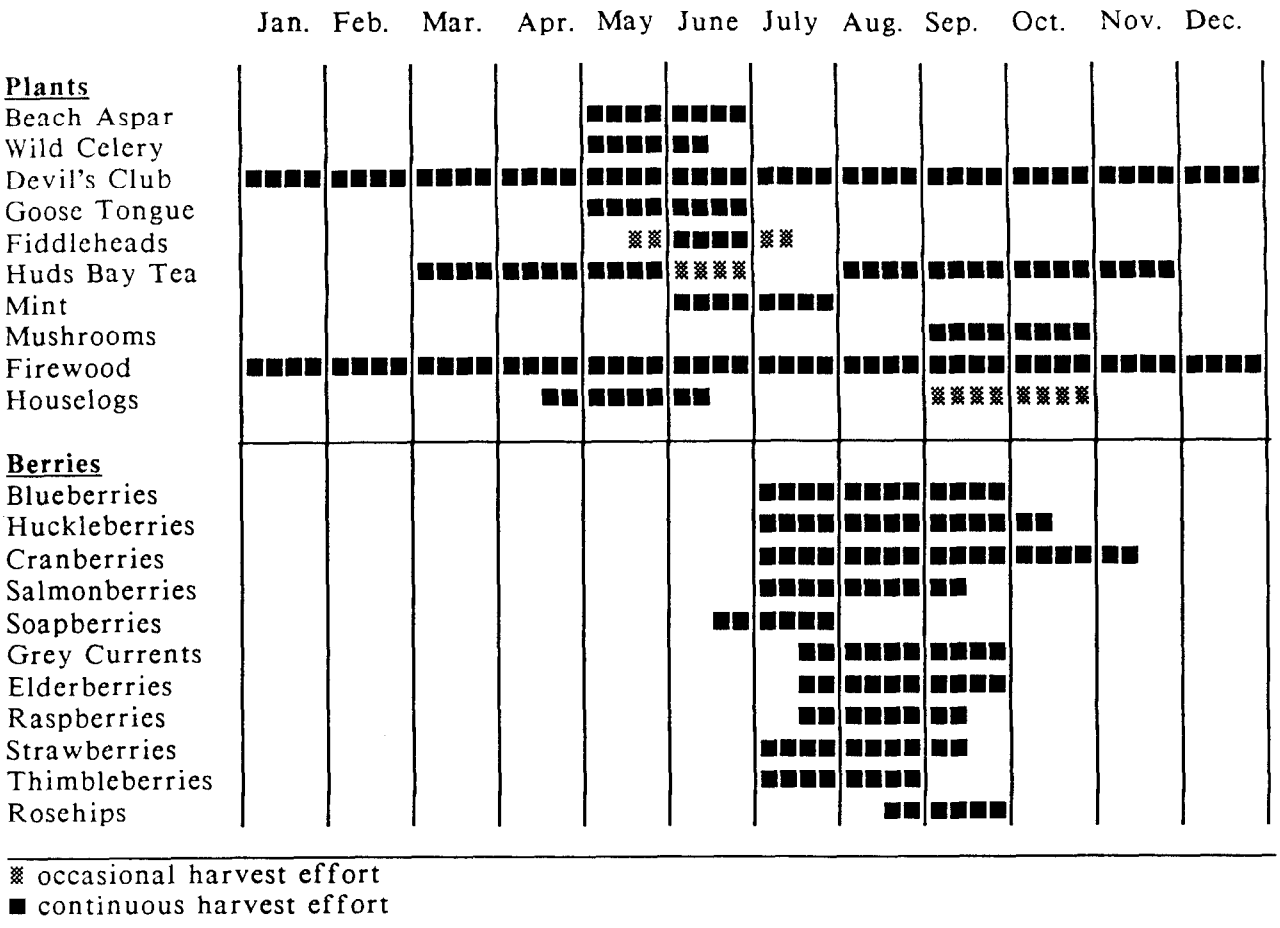
The harvest of fish, wildlife and plants follows a yearly cycle that is primarily based on the seasonal appearance of fish, game and plant resources. This seasonal round is a regular pattern, although some fluctuation appears from year to year depending on the availability of certain species and weather conditions. In more recent times, wage employment and regulations have influenced the timing of harvests. The knowledge of these seasonal fish, wildlife and plant harvesting opportunities is widely shared throughout the community.

Figure 16. Kake Seasonal Round of Subsistence Harvest Activities, 1980s.



⁕ occasional harvest effort
■ continuous harvest effort

Kake Seasonal Round of Harvest Activities



▒ occasional harvest effort
■ continuous harvest effort

Geography of Harvest Activities

Harvest Areas by Species

Hunting and fishing areas used by Kake residents are represented in Figures 18 through 23. These maps were developed from mapping sessions with key respondents (see methodology section). They show areas used during the past 50 years or so for hunting and fishing species and species groups that are important to Kake residents. These contemporary use areas may be compared to the map of traditional clan territory (Fig. 15) to see correspondence with the historical harvest areas of the Kake Tlingit described by Goldschmidt and Haas (1946). As can be seen, there is a high degree of continuity in the contemporary use areas within the traditional deer territories of the Kake Tlingit. That is, most contemporary use occurs within traditional areas.

For the purpose of analyzing the use of the Kake area for subsistence activities, the study area was divided into 35 different named geographical units (see Fig. 17). The random sample of 70 households were asked the years they had used each harvest area. This method enabled a determination of the relative intensity of use of portions of the area by local residents as measured by the percent of households using an area. Figures 17 and 18 show the percentage of the 1985 Kake survey respondents who have used these 35 units for hunting, fishing and gathering during their lifetimes. Keku Strait, Pybus Bay, Hamilton Bay, Pt. Gardner, Saginaw Bay, Eliza Harbor, Security Bay, Gut Bay, Pinta Point, Port Camden, Pillar Bay, and Tebenkof Bay, were utilized by 50 percent or more of the respondents. Most of these places have been used traditionally by Kake people with the exception of Eliza Harbor and Pt. Gardner, which were part of Angoon's traditional use area. These areas, on south Admiralty Island, attracted commercial fishers since the early 1900s and were increasingly used by deer hunters after the decline of deer populations and the 1975 deer hunting closure on Kupreanof and Kuiu islands, as discussed further below. Even though the numerous dispersed Tlingit villages became consolidated into Kake in the early 1900s, Kake residents today continue to use many of their traditional areas for harvesting wild resources. Within this

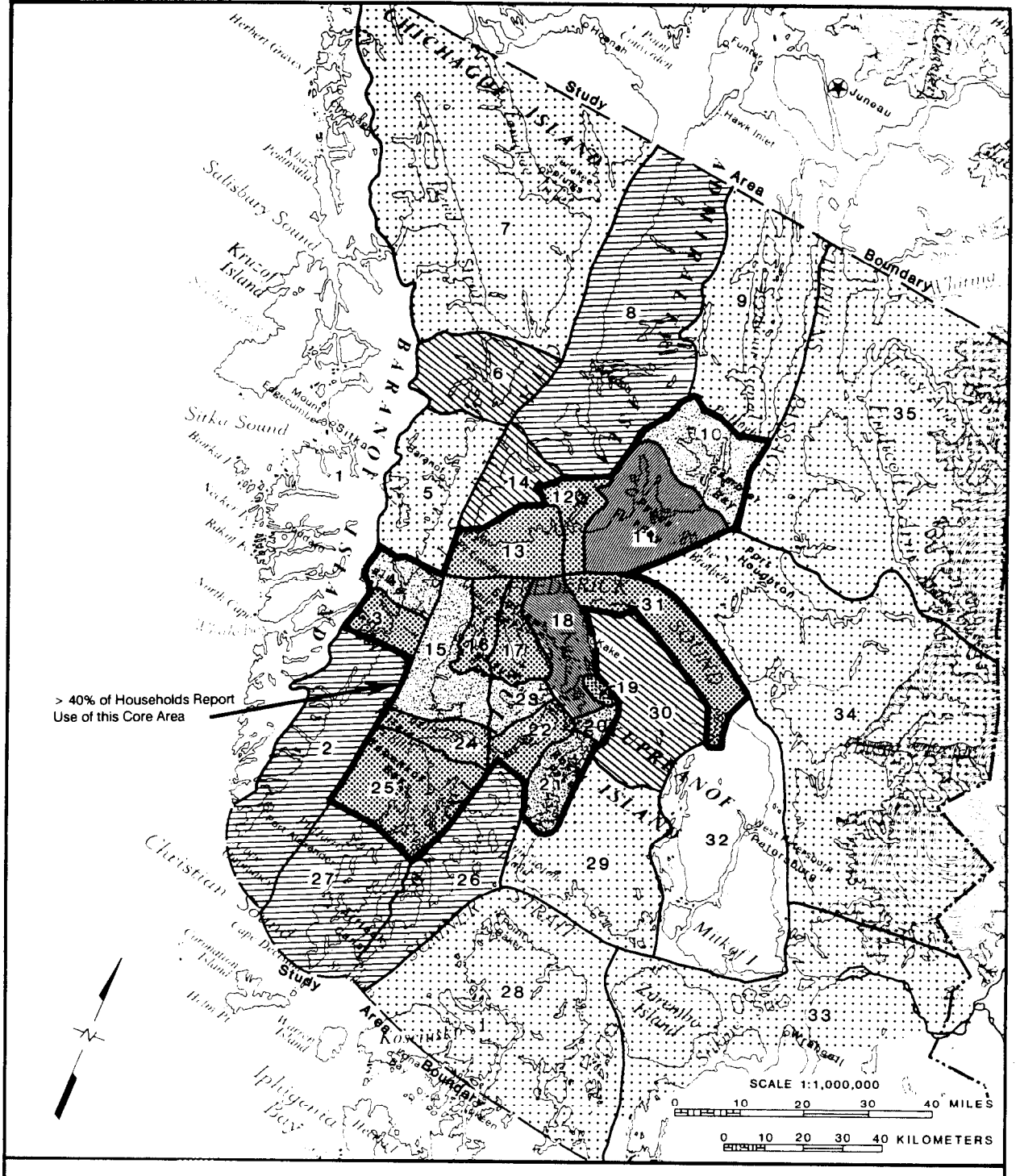


Figure 17. Kake Area Geographic Analysis Units, Shaded to Indicate Intensity of Use

- 0-10% of Households
- 11%-20% of Households
- 21-30% of Households
- 31%-40% of Households
- 41%-50% of Households
- 51%-60% of Households
- 60% or more Households

1-W. Baranof
2-Port Alexander
3-Gut Bay
4-Red Bluff Bay
5-Warm Springs Bay
6-Kelp Bay
7-Peril Strait
8-Angoon
9-Seymour Canal
10-Gambier Bay
11-Pybus Bay
12-Eliza Harbor
13-Pt. Gardner
14-Whitewater Bay
15-Rowen Bay
16-Security Bay
17-Saginaw Bay
18-Keku Strait
19-Hamilton Bay
20-Big John Bay
21-Rocky Pass
22-Port Camden
23-Kadake Bay
24-Pillar Bay
25-Tebenkof
26-No Name Bay
27-Affleck Canal
28-Prince of Wales
29-S. Kupreanof
30-Roaded Area
31-Pinta Point
32-Petersburg
33-Wrangell
34-Port Houghton
35-Sumdum

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traditional territory, the coastlines of West Kupreanof, Kuiu, South and East Admiralty and small sections of Southeast Baranof islands form the nucleus of their subsistence harvest areas (areas greater than 41% use in Figs. 17 and 18).

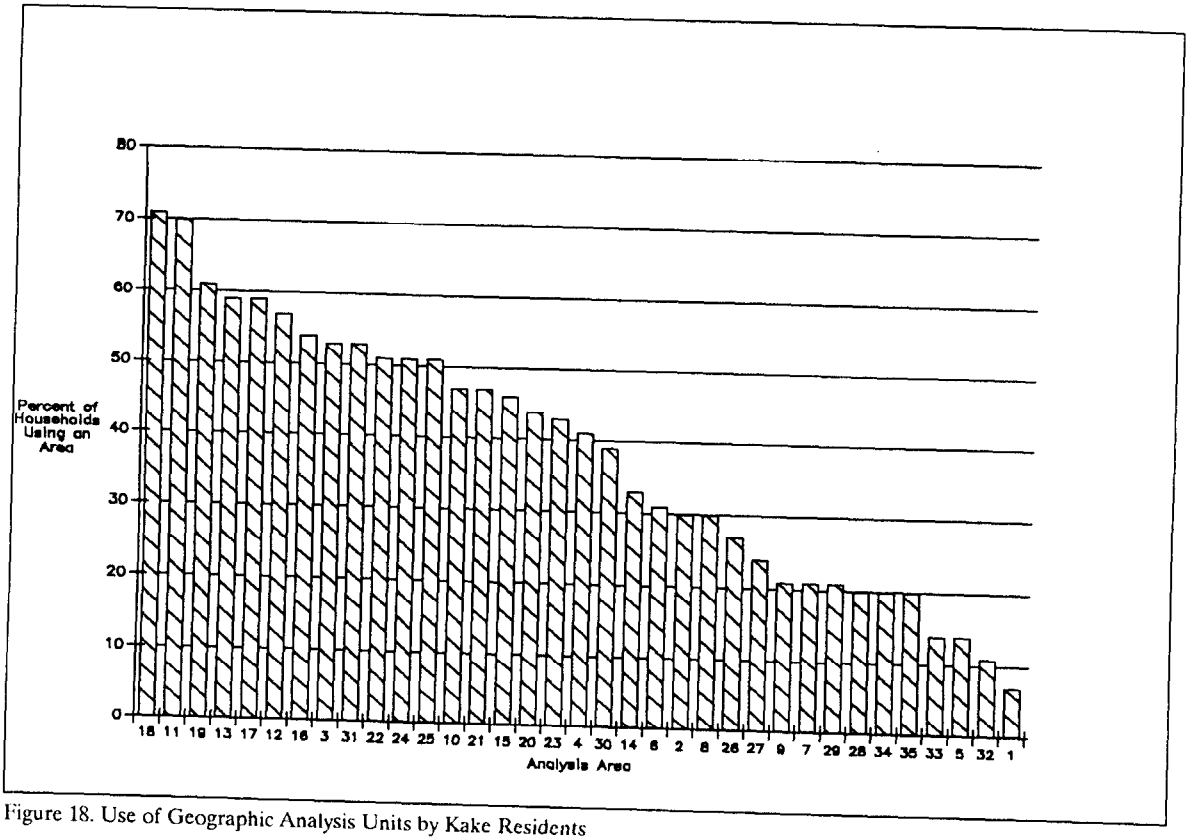


Figure 18. Use of Geographic Analysis Units by Kake Residents

Deer Hunting Areas

Figure 19 shows the areas that Kake key respondents have used for deer hunting during their lifetimes. Deer are hunted along the southeast coast of Admiralty Island from lower Seymour Canal down through Gambier and Pybus bays, and Eliza Harbor to Point Gardner. In the course of the 1985 study, several people mentioned that hunters will harvest deer among the small islands in Murder Cove which is between Tyee and Point Gardner. Occasional hunting takes place north of Point Gardner to Hood Bay if deer can not be taken in the previously mentioned areas. The weather conditions at Point

Gardner can be severe and capricious, making navigation around the point dangerous, especially during the fall and early winter months when deer hunting usually takes place.

Infrequent hunting also occurs along the coast of Baranof Island from Emmons Island in Peril Strait to South Catherine Island and farther south to Port Alexander. From there people hunt around the tip of Baranof, north to Whale Bay. The southern portion of Baranof Island was used frequently during the middle 1940s and 1950s when many Kake people fished commercially and had homes in the Port Alexander area. The Catherine Island and Peril Strait areas are sporadically hunted at times when sufficient deer cannot be found on Admiralty Island.

Deer have also been hunted by Kake residents along the shoreline of Chichagof Island from Peril Strait to Sitkoh and Florence Bays and up to Basket Bay, and at the mouth of Tenakee Inlet and Freshwater Bay.

Prior to the 1975 season, deer were hunted on Kuiu Island in Saginaw, Security, Pillar, Tebenkof, Reid and No Name Bays, in Port Camden and south along the west shoreline of Rocky Pass. Hunting also took place along the northern shore of Kupreanof Island, south to Kake and Hamilton Bay through Rocky Pass around Point Barrie to Totem Bay.

Kuiu and Kupreanof islands were closed to deer hunting in 1975 due to a drastic decline in the deer population. Since that time, hunting effort has focused mainly on Admiralty Island, particularly at Gambier Bay, Pybus Bay, and Eliza Harbor. It is important to note that the interior of Kupreanof and Kuiu islands were never hunted for deer. However, the deer populations supported by the upland island habitat supplied coastal areas with deer, which were hunted by Kake residents.

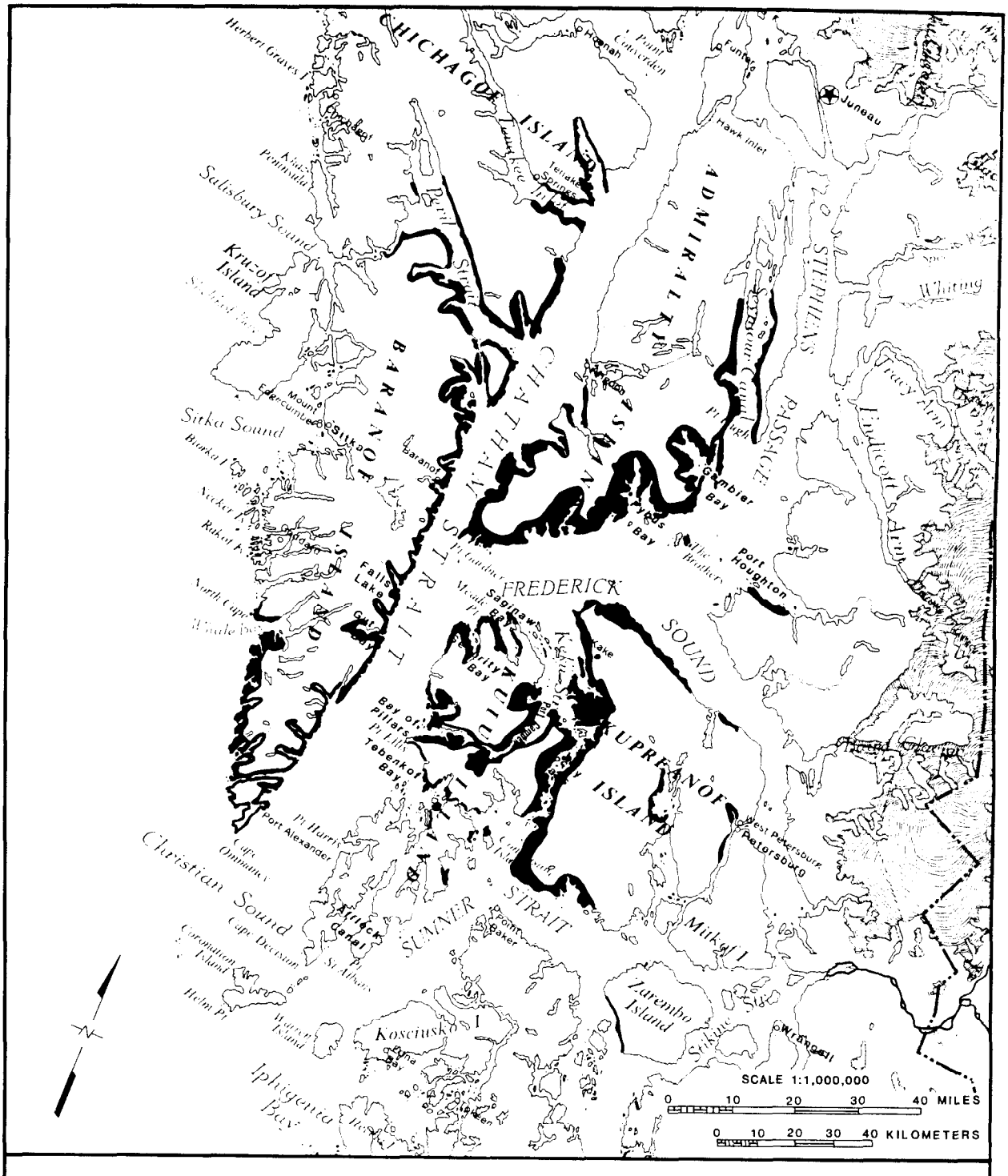
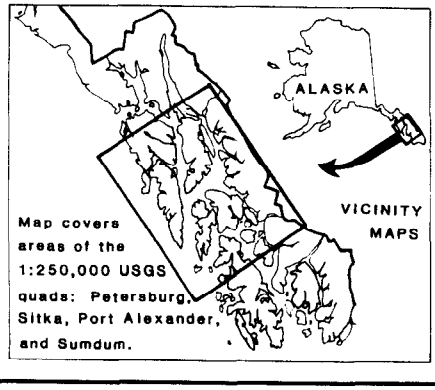


Figure 19. Areas Used For Deer Hunting During the Lifetimes of Kake Key Respondents



This map depicts areas used for resource harvesting by a sample of Kake residents. Interviews were conducted from March through July of 1986. Because not all residents were interviewed, it is likely that some use areas have been omitted. Therefore, this map must be considered to be an incomplete representation of all Kake use areas.

Information for this map was collected by Anne Firman from 18 key respondents. The map illustrates the areas they have used while living in Kake.

See: Harvest and Use of Fish and Wildlife by Residents of Kake Alaska, by Anne Firman and Robert Bosworth, Division of Subsistence Technical Paper No. 145, for further information.

More detailed 1:250,000 scale maps are available at the Division of Subsistence.

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Subsistence Fishing Areas

Subsistence salmon fishing areas are much smaller in area in comparison with deer hunting (Fig. 20 cf. 19). Subsistence fishing for sockeye salmon takes place at Gut Bay and Falls Lake, on East Baranof Island, and Red Bluff Bay, Tebenkof Bay and Pillar Bay on Kuiu Island. Chum, pink and coho salmon are harvested at Port Camden, Security Bay and Saginaw Bay on Kuiu Island. Pybus Bay and Gambier Bay are used for harvesting all species except sockeyes. Trolling for king salmon takes place in Keku Strait and Frederick Sound as well as in bays and inlets around Kuiu Island.

Marine Invertebrate and Marine Plant Harvest Areas

Figure 21 shows the harvest areas for marine invertebrates and marine plants. This resource group consists of gumboots, sea cucumber, sea urchins, octopus, clams, cockles, crab, and seaweed. These food items are harvested in intertidal and nearshore areas along Admiralty Island from Pybus Bay to just north of Pt. Gardner. Other areas include the west side of Kupreanof Island from Pt. Barrie up Rocky Pass to Big John Bay, Dakaneek Bay, and Hamilton Bay, continuing north of the townsite of Kake to Pt. Macartney and Pinta Point.

On Kuiu Island marine invertebrates and marine plants are collected in Port Camden and Kadake Bay on the east side, in Saginaw Bay and Security Bay and south along the west coast to Pillar Bay, Tebenkof Bay and Windfall Island. The southern tip of Larch Bay, and Port Lucy north to Gut Bay are the primary marine invertebrate harvest areas on Baranof Island.

Crab are harvested in Big John Bay and Hamilton Bay on Kupreanof Island and in Kadake Bay on Kuiu Island. Crab are also harvested among the Keku islands in Keku Strait.

Waterfowl Hunting Areas

Certain bays and shallow waterways on of Kupreanof, Kuiu and Admiralty islands provide excellent resting areas for migrating waterfowl. Ducks and geese are plentiful during fall migration and are harvested along the western side of Kupreanof Island from Hamilton Bay through Rocky Pass to south Keku Straits, in Port Camden and Kadake Bay on eastern Kuiu Island, and on the west side of

Kuiu Island in Saginaw Bay, Security Bay, Pillar Bay, and Tebenkof Bay. Some waterfowl hunting takes place in conjunction with deer hunting trips to the east side of Admiralty in Pybus Bay and little Pybus Bay, to Sunrise Harbor and Murder Cove on the south tip, and along the west side of Admiralty south of Pt. Wilson to north of Wilson Cove (Fig. 22)

Trapping Areas

Trapping is an activity that was common in Kake 30 years ago but is less so today. Historically, the Rocky Pass area and Tebenkof Bay were used intensively for trapping. Survey respondents say that today there are only a few trappers in Kake. These individuals become active trappers when the price of furs is high enough to justify the effort. Many trapping areas shown in Figure 23 are used infrequently today.

Trapping takes place on north Kupreanof Island from Pinta rocks to Big Creek, on west Kupreanof Island along both sides of Rocky Pass and south Keku Strait, in Hamilton and Davidson bays, and behind the town of Kake along Jenny, Sitkum and Gunnak creeks. The shoreline north of Kake is also used for trapping, as are the Keku islands directly in front of the townsite. In recent years Kake residents also have trapped in Gambier Bay on Admiralty Island.

Kuiu Island has been used extensively for trapping from Cornwallis Pt. to Kadake Bay including Kadake Bay, and north of Security Bay at Meade Point and from Kingsmill Point south almost to Washington Bay.

Seal Hunting Areas

Seal hunting takes place in several nearshore areas, some relatively distant from Kake (Fig. 24). Seals are hunted from Seymour Canal along the east Admiralty Island coastline to Sunrise Harbor. Seals are taken in all waters surrounding Kuiu Island except from Kings Mill point to Pillar Bay, on the west side of the island. Seals are also taken off of Kupreanof Island from north Keku Straits through Rocky Pass to south Keku Straits (Fig. 24). Seal harvesting is often opportunistic hunting that occurs while deer hunting. As one respondent said, "If you see it, you take it".

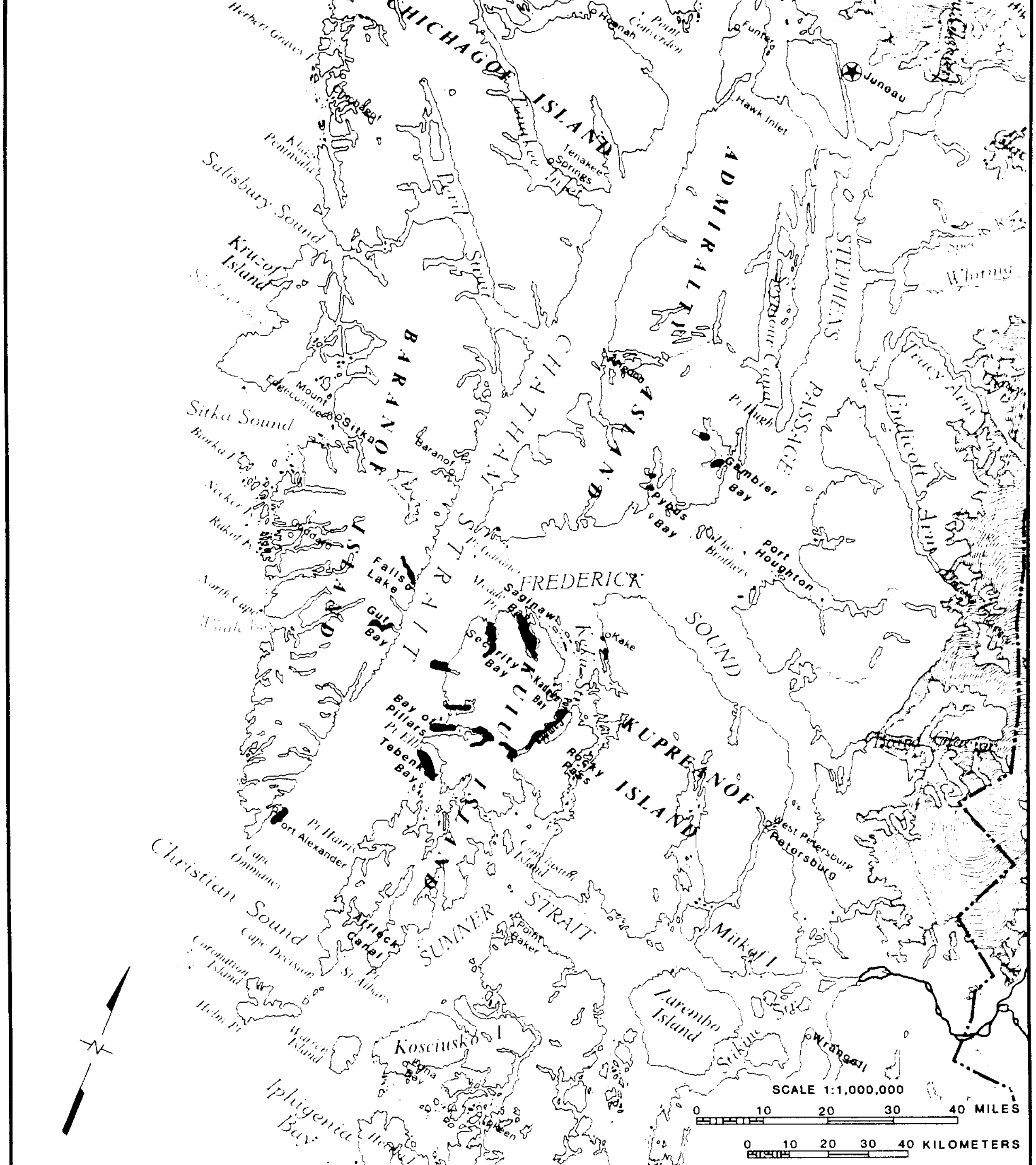
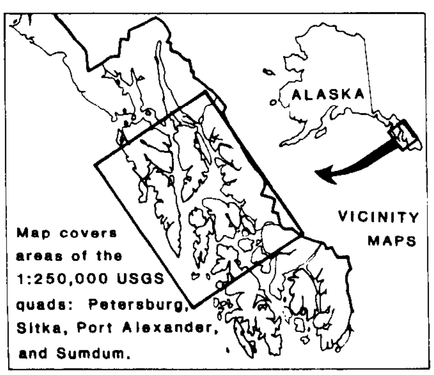


Figure 20. Areas Used For Subsistence Salmon Fishing During the Lifetimes of Kake Key Respondents



This map depicts areas used for resource harvesting by a sample of Kake residents. Interviews were conducted from March through July of 1986. Because not all residents were interviewed, it is likely that some use areas have been omitted. Therefore, this map must be considered to be an incomplete representation of all Kake use areas.

Information for this map was collected by Anne Firman from 18 key respondents. The map illustrates the areas they have used while living in Kake.
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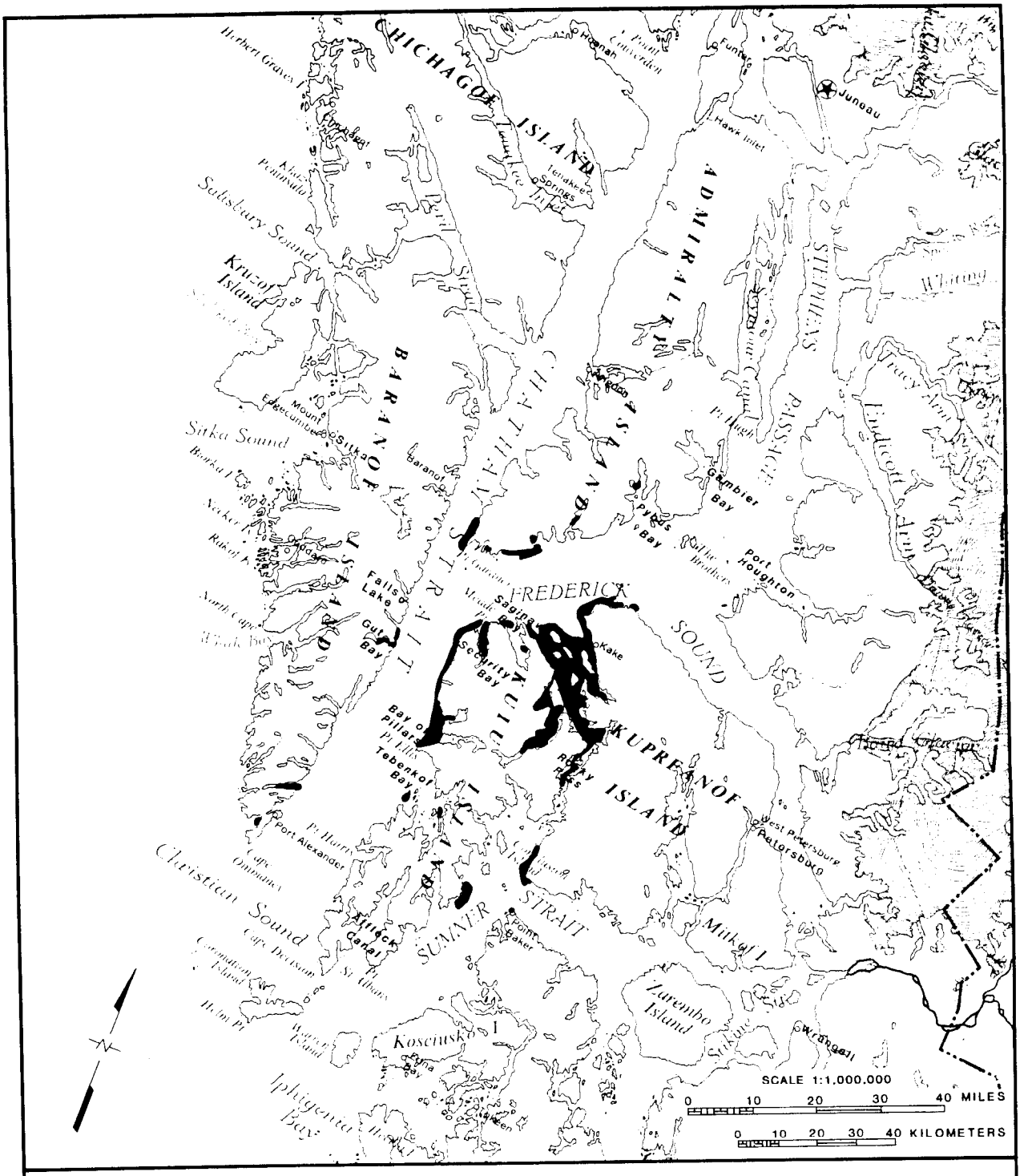
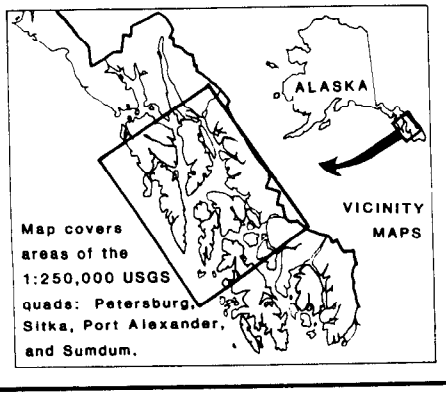


Figure 21. Areas Used For Intertidal/Marine Invertebrate and Plant Harvesting During Lifetimes of Kake Key Respondents



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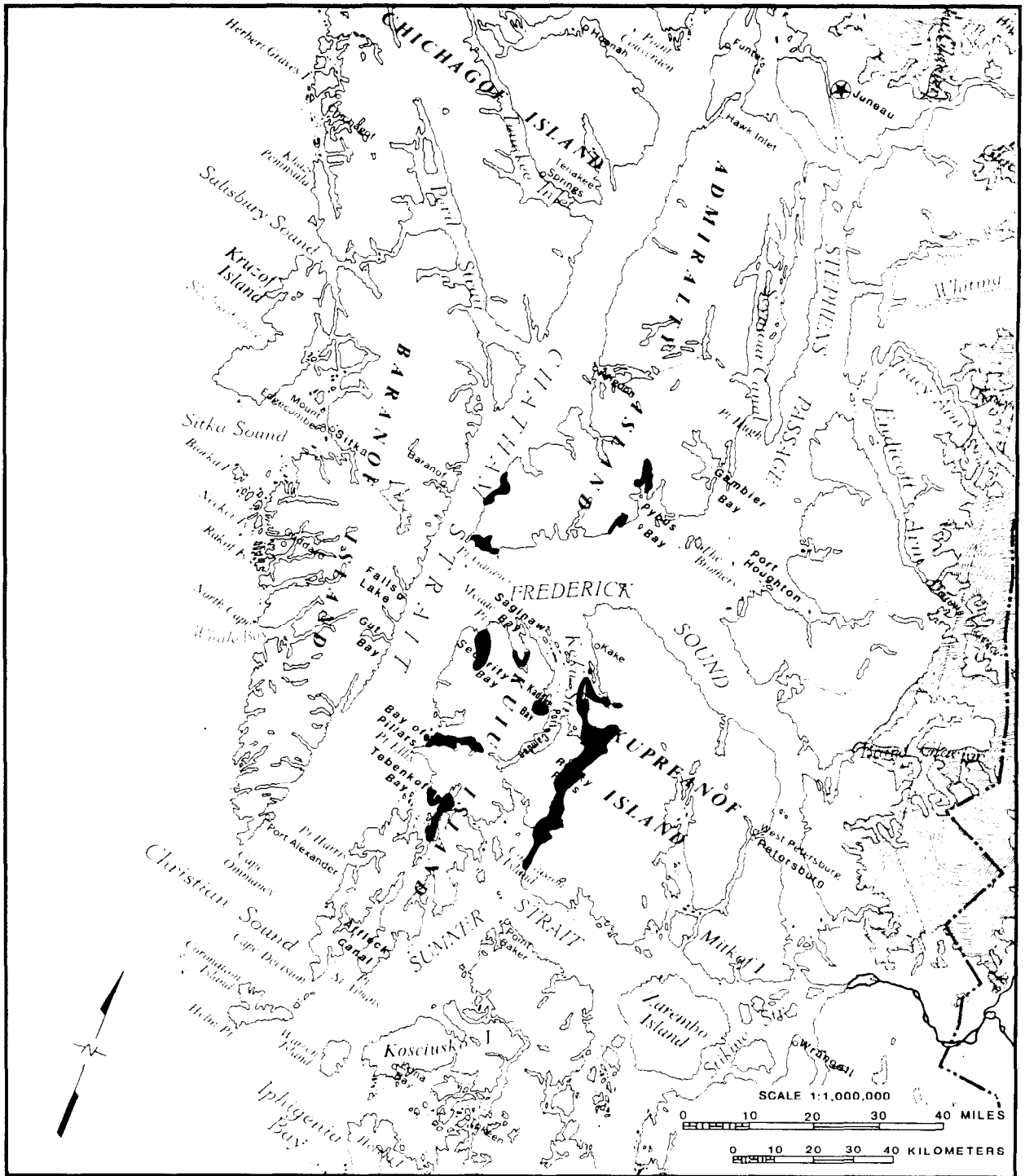
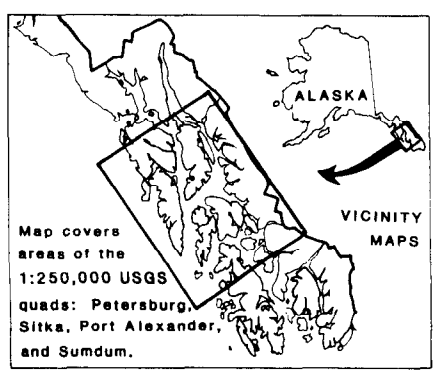


Figure 22. Areas Used For Waterfowl Hunting During the Lifetimes of Kake Key Respondents



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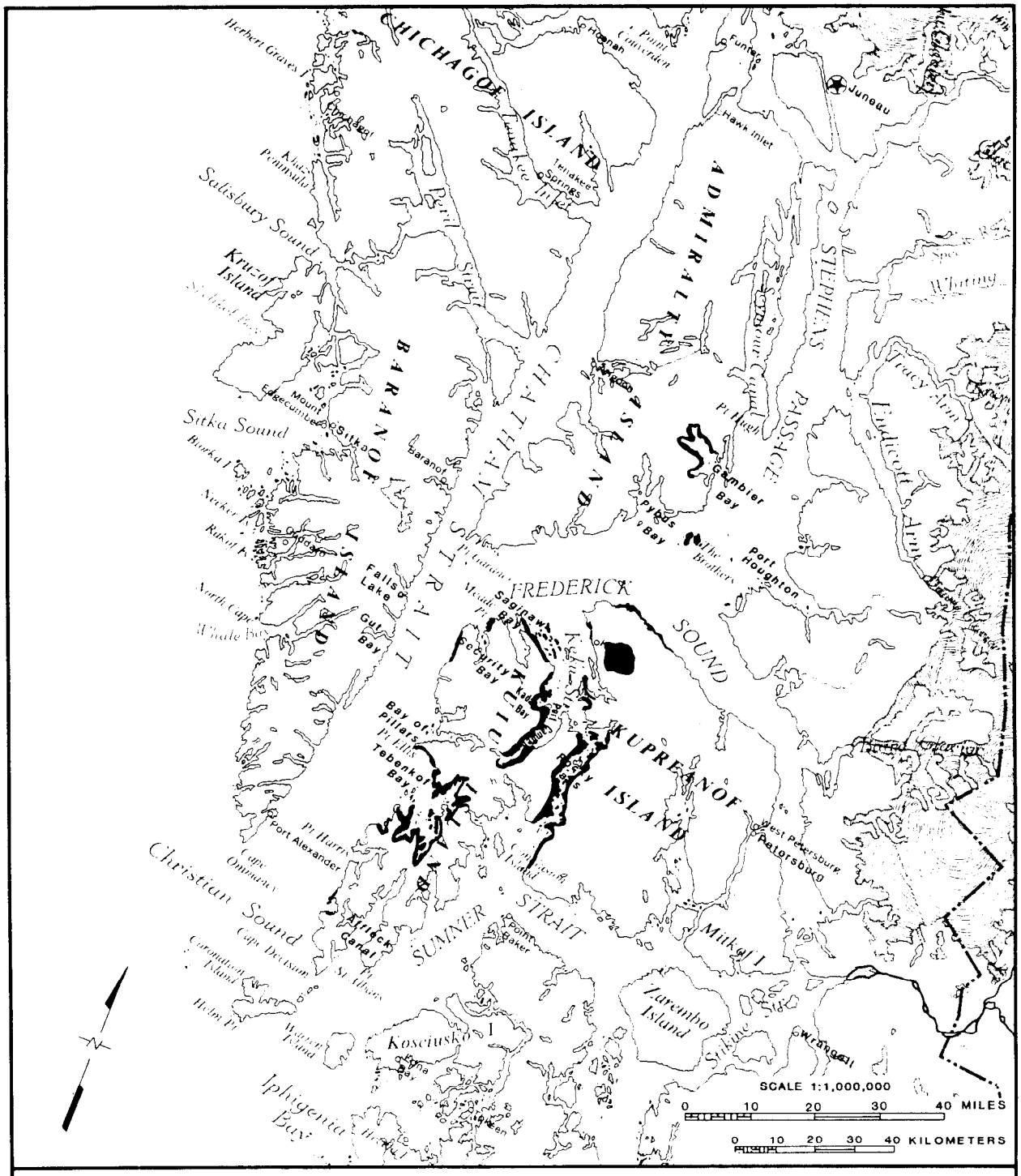
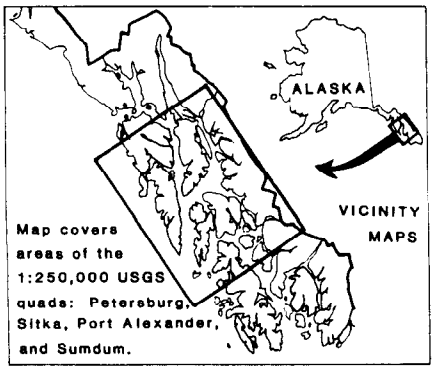


Figure 23. Areas Used For Trapping During the Lifetimes of Kake Key Respondents



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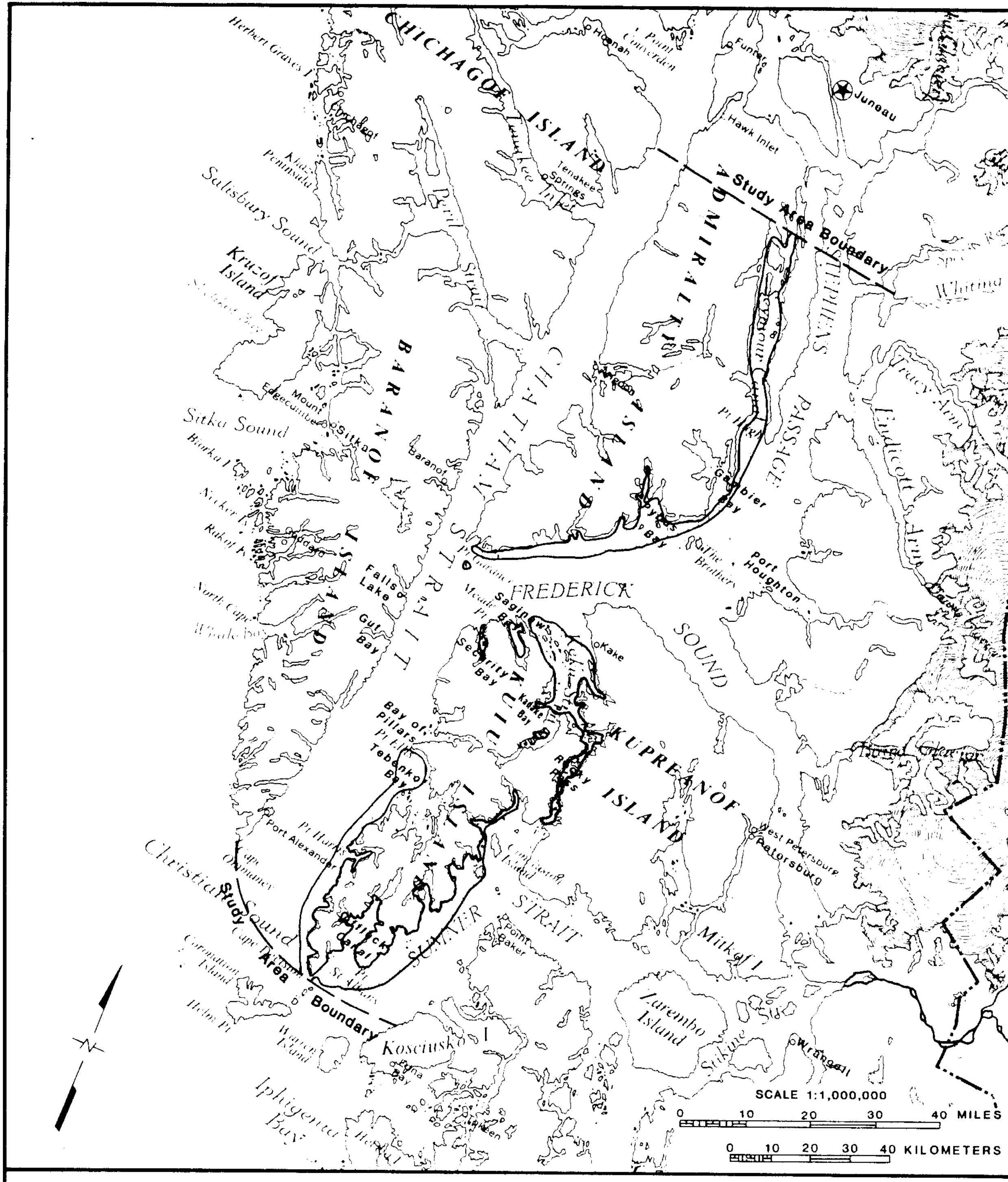
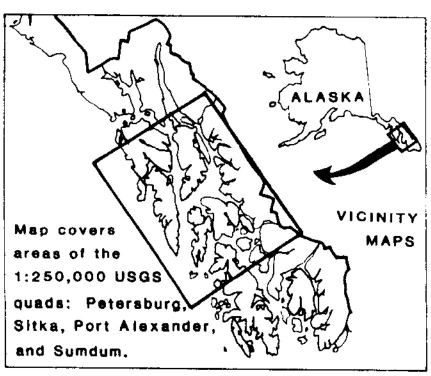


Figure 24. Areas Used For Seal Hunting During the Lifetimes of Kake Key Respondents



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HARVEST AND USE OF SUBSISTENCE RESOURCES

Subsistence harvest and use information was collected in 1985 by surveying a randomly selected sample of 70 Kake households (30 percent of the households in Kake) (see methodology). These households contained 256 members ranging in age from newborn to 107 years old. Survey respondents were asked about the harvest, use, and distribution of particular food species by their households. The numbers of specific resources harvested were converted to pounds of useable food weight using weight conversion factors (Appendix B).

Participation in Resource Harvest and Use

The level of resource harvest and use in Kake from May 1985 through May 1986 is shown in Table 7 and Figures 25 through 30. "Harvest" refers to the actual taking of a resource (whether or not it is consumed by the harvester), while "use" refers to the consumption of a resource as food (whether it was actually harvested or was received from another household).

Fourty-four percent of the households in the sample reported hunting during the 1985 season. Fifty-four percent of the households reported harvesting salmon non-commercially. Thirty percent of the households harvested salmon commercially and removed some for home use. Sixty-eight percent of the households used deer while 78.6 percent used non-commercially caught salmon with 28.6 percent using commercially caught salmon for personal consumption or distribution.

The difference between harvest and use is generally one indicator of the sharing of foods within a community or between communities. most resources were shared to some extent. King salmon, non-commercial halibut, herring eggs, red snapper, and dungeness crab in particular were harvested by a few households and widely distributed to many, as shown in Table 7 by the difference between harvest and use.

The number of wild food species harvested and used per household (breadth of resource use) is depicted in Figure 25. Household harvest and use varied widely, from no use at all in several households in the survey to one household that used nineteen food species. Eighty-seven

Table 7. Harvest and Use of Wild Resources In Kake, 1986.

Resource	Percent of Households (N=70) Using	Harvesting	Mean Quantity[1] Used Per Household	Harvested Per Household	Mean Edible Pounds Used Per Household	Harvested Per Household	Edible Pounds Harvested Per Capita
SALMON REMOVED FROM COMMERCIAL CATCH							
King	17.1	21.4	0.9	1.2	12.5	17.1	4.7
Chum	10.0	12.9	1.4	1.9	9.7	13.2	3.6
Pinks	12.9	15.7	4.1	4.7	11.1	12.9	3.5
Sockeye	8.6	10.0	0.8	0.9	4.5	5.1	1.4
Coho	14.3	18.6	1.8	2.5	12.4	16.7	4.6
All Salmon	28.6	30.0	9.0	11.2	50.2	65.0	17.8
SALMON CAUGHT NON-COMMERCIALLY							
King	50.0	22.8	2.7	2.6	39.9	37.8	10.3
Chum	41.0	34.3	8.6	9.6	58.6	65.6	17.9
Pinks	25.7	20.0	5.4	5.8	14.6	15.7	4.3
Sockeye	37.1	28.6	7.4	7.1	40.9	38.9	10.6
Coho	31.4	21.4	3.3	4.4	22.1	29.5	8.1
All Salmon	78.6	54.3	27.4	29.5	176.3	187.4	51.2
OTHER FISH							
Comm. Halibut	24.3	24.3	-	-	33.4	41.5	N.D.
Non-Comm Halibut	64.3	31.4	2.7	3.0	84.1	95.6	37.5
Cutthroat Trout	27.1	24.3	4.4	5.7	6.6	8.6	2.3
Dolly Varden	22.9	22.9	3.6	3.8	5.0	5.3	1.4
Rainbow Trout	5.7	5.7	0.5	0.4	0.9	0.7	0.1
Steelhead	17.1	10.0	0.4	0.3	2.4	1.9	0.5
Hooligan	7.1	0.0	-	-	0.4	0.0	0.0
Pacific Herring	17.1	11.4	-	-	2.3	2.1	0.6
Herring Eggs/Kelp	37.1	4.3	-	-	7.7	3.1	N.D.
Sablefish	12.9	5.7	-	-	2.7	2.8	0.9
Cod	2.9	1.4	-	-	1.6	0.7	N.D.
Red Snapper	44.3	25.7	3.0	2.1	9.1	6.3	1.8
Other Rockfish	1.4	1.4	-	-	0.3	0.4	N.D.
MARINE INVERTEBRATES							
Cockles	25.7	18.6	0.3[2]	0.3[2]	2.5	2.3	0.6
Clams	71.4	61.4	2.0[2]	2.2[2]	15.6	17.7	4.8
Dungeness Crab	61.4	27.1	13.5	10.6	33.7	26.6	7.3
King Crab	12.9	2.9	0.3	0.1	2.2	0.4	0.8

[1] All quantities are given in numbers unless otherwise indicated. A dash means that data were collected in pounds.

[2] 5 gallon buckets

N.D. = No Data

Resource	Percent of Households (N=70) Using	Harvesting	Mean Quantity[1] Used Per Household	Harvested Per Household	Mean Edible Pounds Used Per Household	Harvested Per Household	Edible Pounds Harvested Per Capita
MARINE INVERTEBRATES Cont.							
Tanner Crab	4.3	0.0	0.2[2]	0.0[2]	0.4	0.0	0.0
Gumboots	64.3	48.6	1.0[2]	0.8[2]	18.0	16.3[2]	4.4
Sea Urchin	0.0	1.4	0.0[2]	*	0.0	0.1[2]	*
Octopus	11.4	10.0	0.2[2]	0.4[2]	1.7	4.0	1.1
Sea Cucumbers	4.3	2.9	0.1[2]	*	0.2	*	0.0
Shrimp	11.4	2.9	-	-	2.4	0.4	0.1
Marine Plants							
Black Seaweed	67.1	48.6	3.0[2]	3.3[2]	59.0	66.1	N.D.
Red Seaweed (sea ribbons)	30.0	25.7	0.6[2]	0.8[2]	12.9	16.6	N.D.
Other Seaweed (Japanese)	1.4	1.4	*	*	*	*	N.D.
Marine Mammals							
Harbor Seal	48.6	31.4	0.9	1.0	84.9	93.9	25.7
Land Mammals							
Deer	68.6	38.6	1.3	1.2	101.3	97.1	26.5
Black Bear	4.3	1.4	*	*	0.8	2.1	0.5
Mt. Goat	2.9	0.0	*	0.0	0.3	0.0	0.0
Moose	2.9	0.0	*	0.0	0.2	0.0	0.0
Birds							
Grouse	28.6	21.4	1.4	1.3	1.0	0.9	0.3
Canada Geese	4.3	2.9	0.2	0.2	1.0	0.9	0.3
Ducks	7.1	5.7	1.2	1.3	1.9	1.9	0.5
Plants & Berries							
Berries	70.0	65.7	13.8[3]	20.5[3]	13.8	20.5	5.6
Plants	24.3	37.1	2.9[3]	3.5[3]	2.9	3.5	1.0

[1] All quantities are given in numbers unless otherwise indicated. A dash means that data were collected in pounds.

[2] 5 gallon buckets.

[3] Quarts

N.D. = No Data

* less than 0.1 but > 0

percent of households used five or more resources, while 64.1 percent harvested five or more resources. On average, households harvested and used between 5-9 resources.

Figure 26 shows the harvest and use of 10 major resource categories. The two categories harvested and used by the greatest number of Kake households were shellfish (which included crab, shrimp, clams and cockles) and salmon. Shellfish were harvested by 70 percent of the households in the sample and used by 94 percent of the households. Salmon were harvested by 61 percent and used by 87 percent of the households.

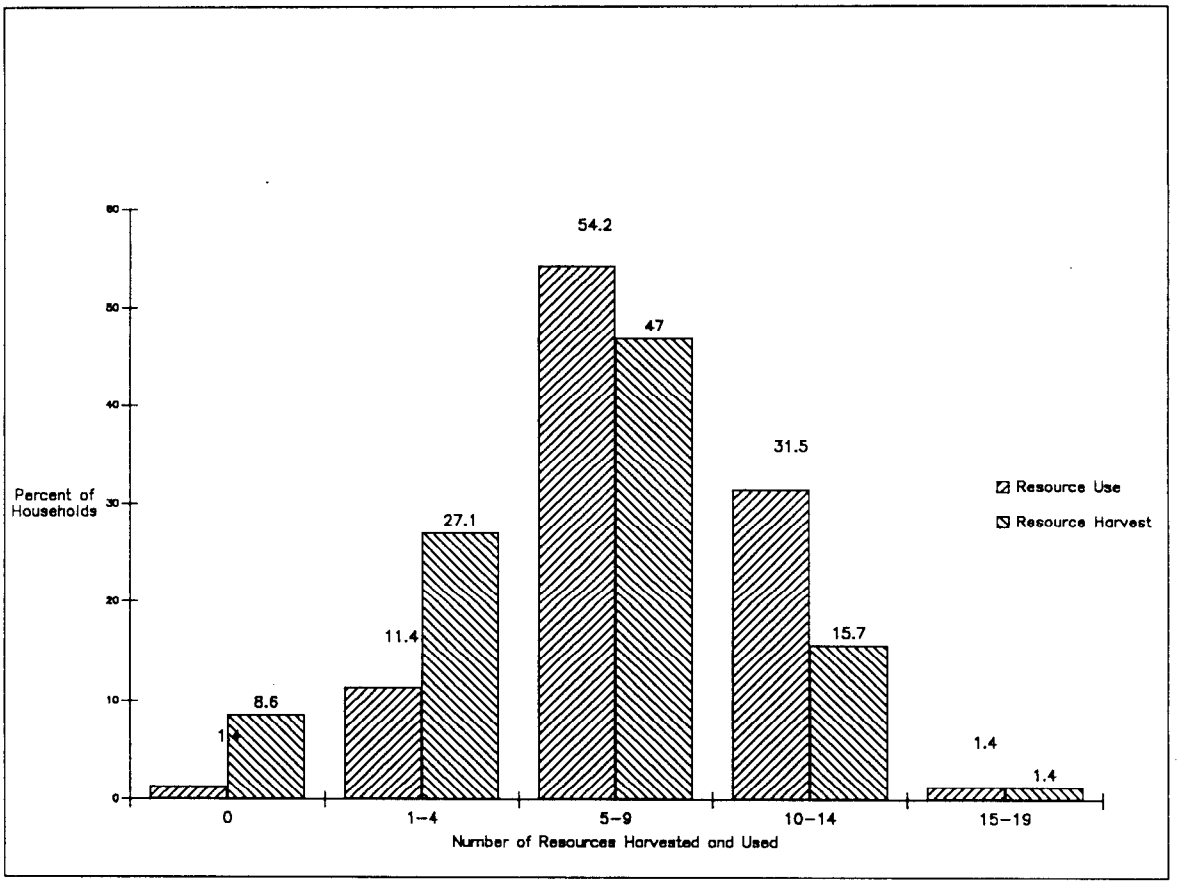


Figure 25. Numbers of Wild Food Species Harvested and Used, Kake 1985.

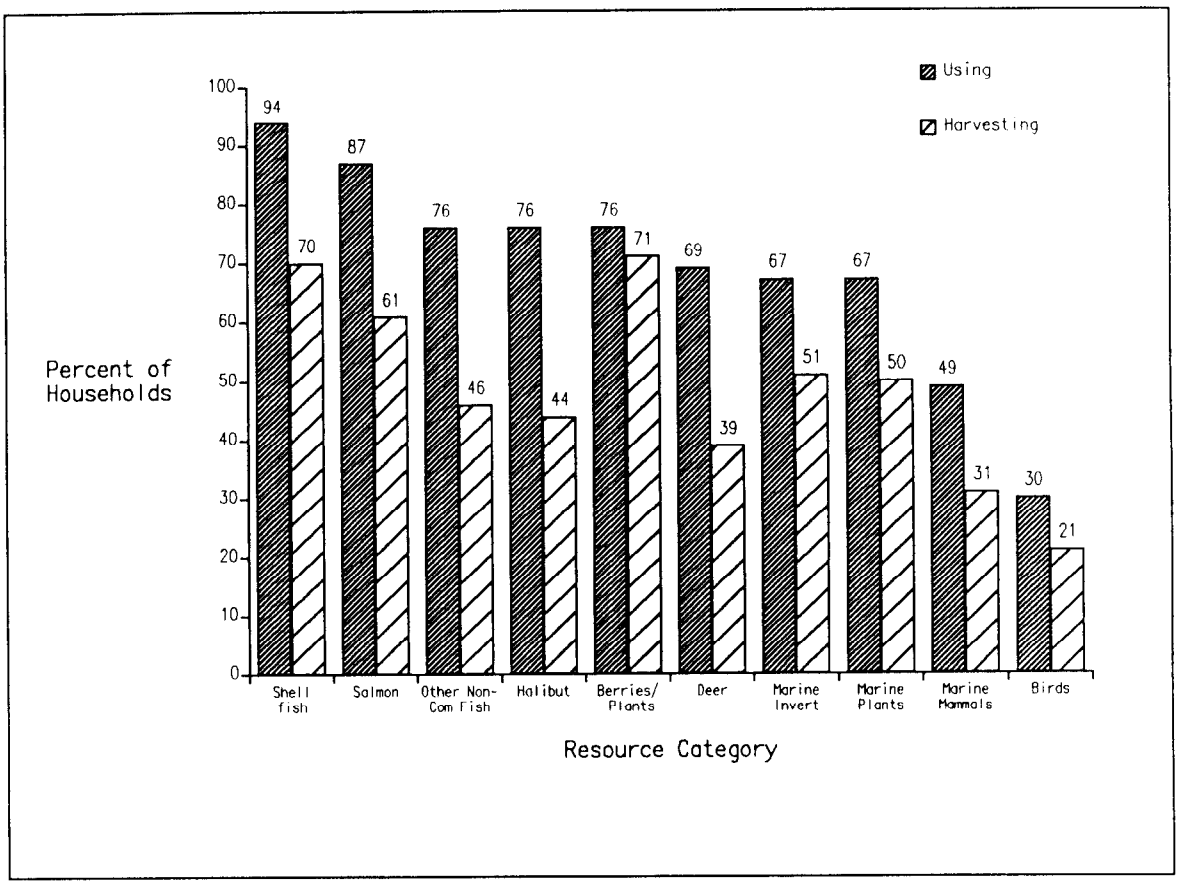


Figure 26. Harvest and Use of Ten Major Resource Categories, Kake 1985.

Distribution of Resource Harvest

The difference between the amounts of a particular food species that is harvested versus used is due to the fact that many people who do the hunting, fishing or gathering of wild resources give food away to others or are given food by other harvesters. Figure 26 shows that many more households in Kake used wild food resources in 1985 than actually harvested them, demonstrating that there is a distribution network for many wild foods among households in Kake. Such a noncommercial distribution network, where fish and game are shared, distributed and exchanged, makes it possible for households that did not participate directly in harvesting and processing to use many resources they would otherwise be unable to obtain.

Table 8 and Fig. 27 show the percentages of households who shared noncommercially caught halibut, noncommercially caught salmon, and deer and the amounts of these resources that were given

away and received. Sampled households gave away an average of 68.4 lbs. of salmon and 15.7 lbs. of deer. They received an average of 46 lbs. of salmon and 19.8 lbs. of deer (Table 8). More households received these resources than gave them away with the exception of chum salmon which was given and received by an equal number of households. Deer were shared more commonly than fish with 21.4 percent of the households (15 households) giving deer and 38.6 percent of the households (27 households) receiving deer. However, as described above, more pounds of salmon was shared than deer.

Table 8. Sharing Deer and Fish Species, Kake 1985.

	Percent of Households		Mean Numbers		Mean Edible Pounds	
	Receiving	Giving	Received Per Household	Given Away Per Household	Received Per Household	Given Away Per Household
Fish*						
Halibut	35.7	18.6	--	--	12.1	22.8
King	31.4	11.4	0.8	0.7	11.4	9.8
Chum	12.9	12.9	1.3	2.3	8.7	15.7
Pinks	10.0	5.7	0.5	0.9	1.4	2.5
Sockeye	11.4	4.3	1.4	1.1	7.9	6.0
Coho	12.9	7.1	0.7	1.7	4.4	11.6
Land Mammals						
Deer	38.6	21.4	0.3	0.2	19.8	15.7

* Harvested with non-commercial gear

Harvest Levels

The average number of pounds of wild foods that were harvested by Kake households from May 1985-April 1986 are shown in Figure 28. Total household harvest of all resources was 793 pounds per household, or 217 pounds per capita. Harvest levels varied from 0 to 2243.4 pounds per household.

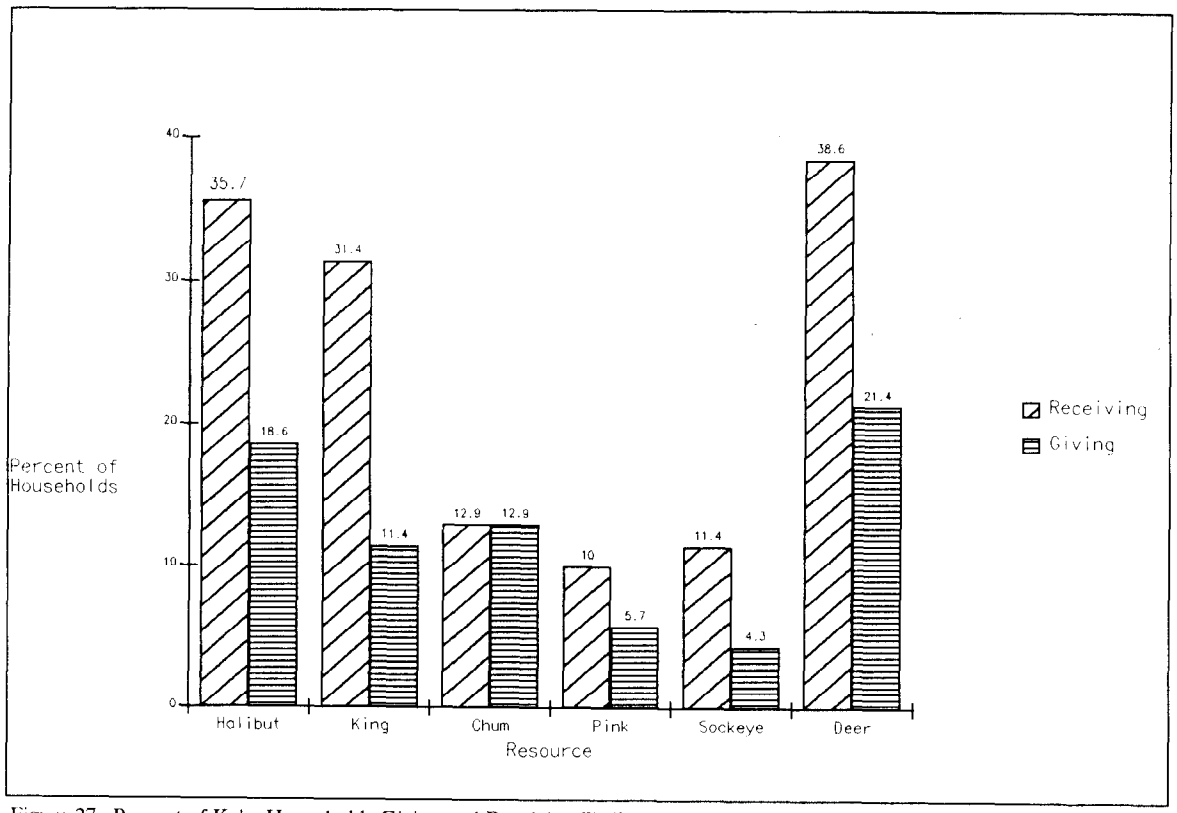


Figure 27. Percent of Kake Households Giving and Receiving Six Resource Types, 1985

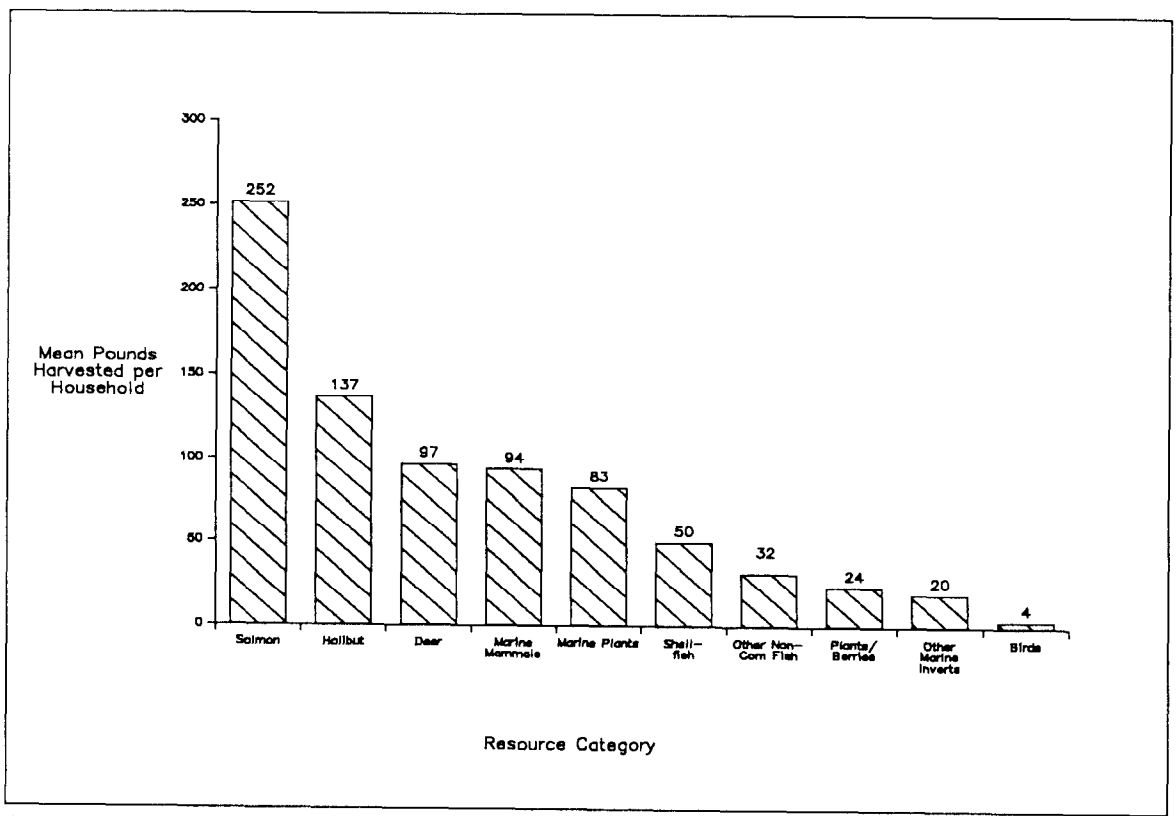


Figure 28. Average Household Harvest (in Pounds), for 10 Resource Categories, Kake 1985.

Figure 29 compares the yearly per capita wild resource harvest of eight southeast Alaska communities. Kake's per capita harvest at 217 pounds falls in the middle range along with the per capita harvests of Tenakee Springs, Angoon and Klawock.

Figure 30 shows the composition of household harvests by weight. Salmon, halibut, deer, marine mammals and marine plants made up the majority of the household harvest. Salmon represented 30 percent of the total weight of wild resources used per household with halibut, deer, marine mammals and marine plants comprising 18 percent, 13 percent, 12 percent and 11 percent, respectively. The remaining categories, which accounted for 18 percent of the total pounds harvested, are shellfish (crab, clams, cockles, and shrimp), other noncommercial fish, plants and berries, other marine invertebrates (gumboots, neets, octopus, and sea cucumber) and birds.

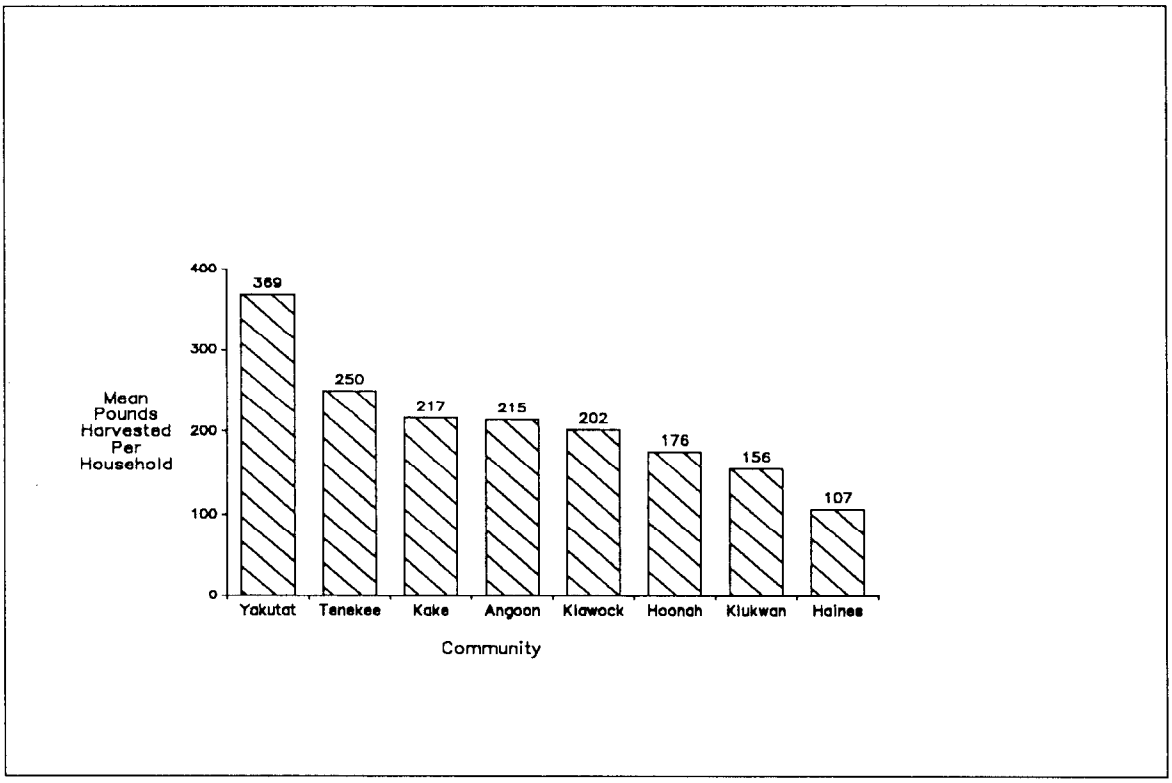


Figure 29. Per Capita Resource Harvests for Eight Southeast Alaska Communities. (Sources: Yakutat: Mills and Firman 1986; Tenakee: Leghorn and Kookesh 1985; Kake: Firman 1989; Angoon: George and Bosworth 1988; Hoonah: Schroeder and Kookesh 1990; Klukwan: Mills et.al 1983; Haines: Mills et. al 1983).

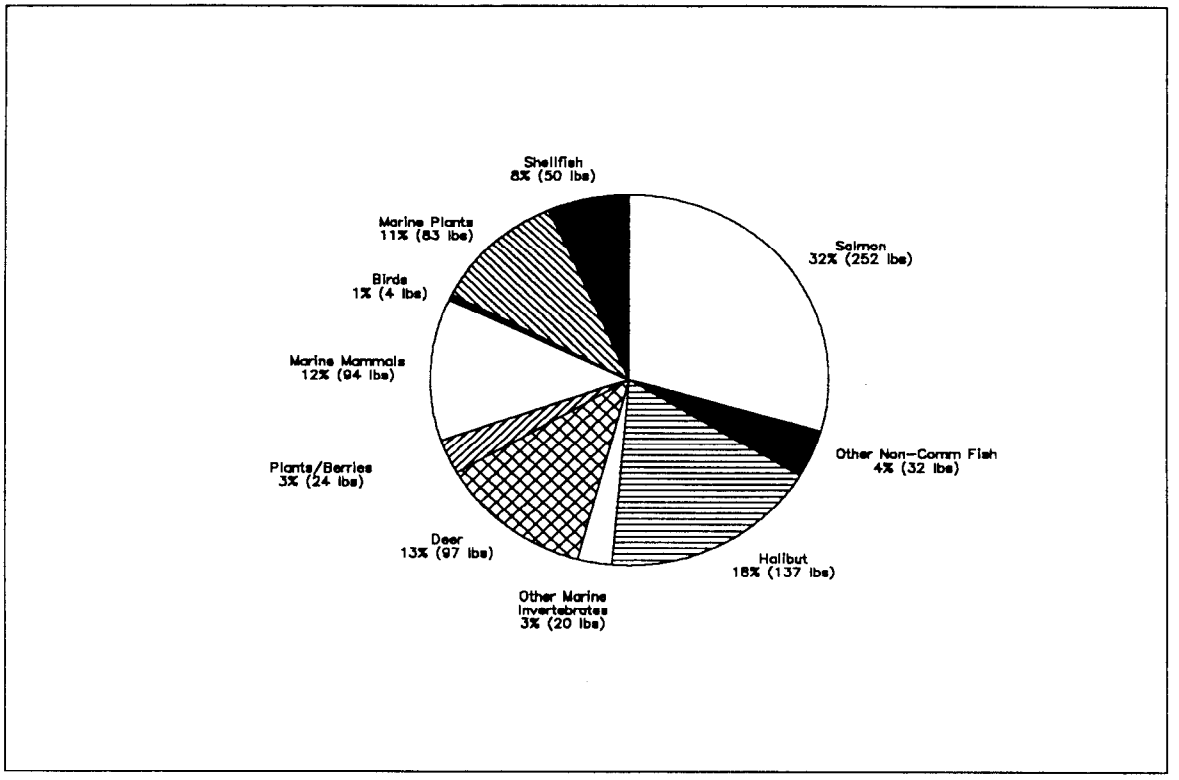


Figure 30. Harvest Composition for Kake Households, 1985

Halibut comprised 137 pounds of the household harvest while deer comprised 97 pounds of the total. The sole marine mammal species harvested was harbor seal at 90 pounds per household. Residents of Kake harvested and used a large quantity of marine plants. This harvest consisted primarily of black and ribbon seaweed, which made up 83 pounds of the total household harvest. Fifty pounds of shellfish (primarily dungeness crab and clams) contributed to the total household harvest. The harvest of upland plants and berries, and other marine invertebrates comprised 24 pounds and 20 pounds per household respectively. Additionally, four pounds of birds complete the household harvest.

Harvest and Use of Salmon

The historical importance of salmon to the Tlingit people has been documented by many authors including de Laguna 1972, Oberg 1973, Newton and Moss 1983, Niblack 1890, and Goldschmidt and Haas 1946. In addition, recent Division of Subsistence Technical Reports by George and Bosworth 1988, Ellanna and Sherrod 1987, Mills and Firman 1986, and Schroeder and Kookesh

1988, discuss the current importance of salmon in the lives of rural southeast Alaska residents. Salmon remains one of the most widely harvested and used resources in Kake and accounted for 32 percent of the mean household harvest composition (Fig. 30). Figure 31 illustrates the relative quantities of salmon species harvested by Kake residents in 1985. Kake households harvested an average of 252 pounds of salmon per household in 1985 (Table 7). Although chums and pinks were harvested in the greatest numbers, household harvest by weight was composed of chum (78.8 lbs.), king (54.9 lbs.), coho (46.2 lbs.), sockeye (44.0 lbs.), and pink (22.6 lbs.), in decreasing order (see Table 7).

High participation rates in harvesting and using salmon are another indication of its importance in the diets of Kake residents. Sixty-one percent of the households in the sample harvested salmon with 87 percent of the households using it (Fig. 26).

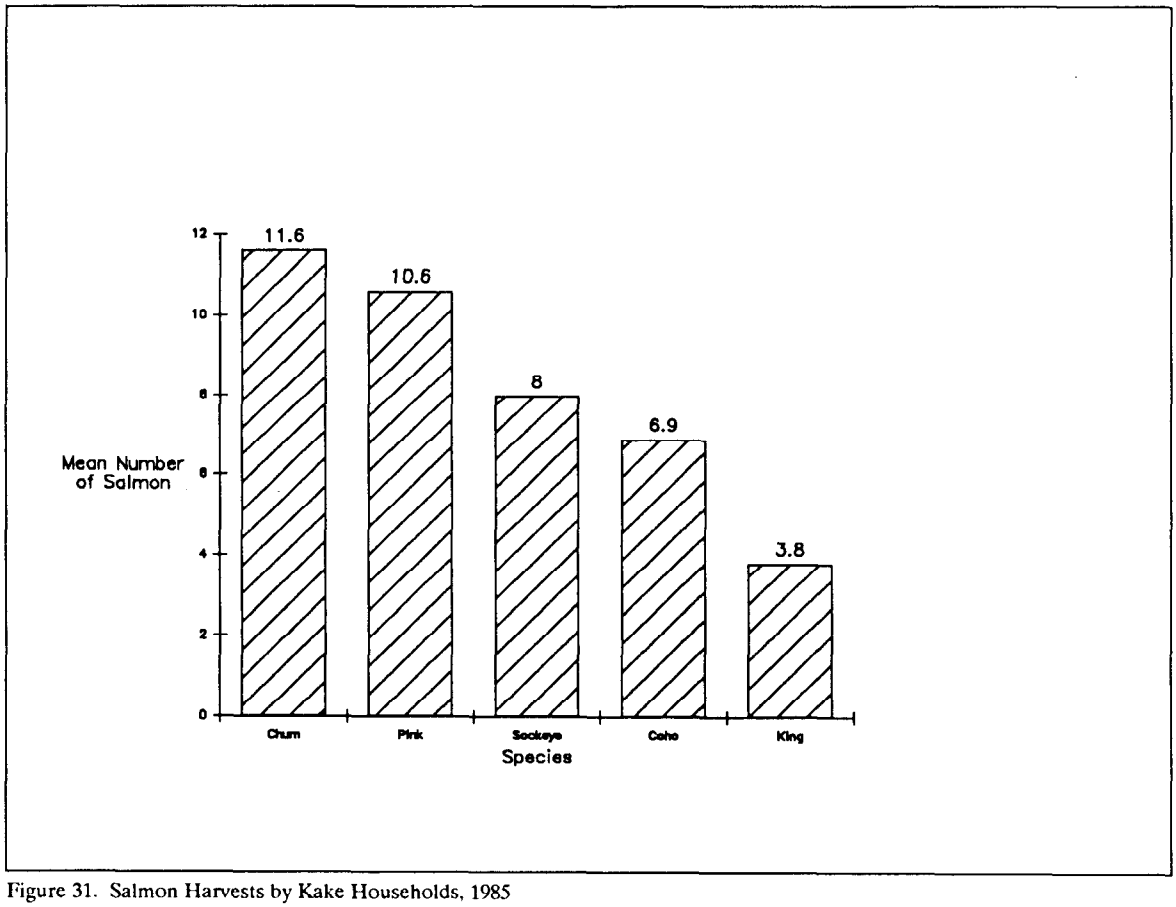


Figure 31. Salmon Harvests by Kake Households, 1985

Salmon Harvest by Gear Type

Kake households used both commercial and noncommercial gear to harvest king, coho, sockeye, chum and pink salmon for home use and distribution. Figure 32 shows the amounts of salmon taken for home use from non-commercial and commercial catches using several gear types. The term "home use" refers to salmon that is non-commercially harvested or is removed from a commercial harvest for use in either the harvester's home or a recipient's home. Seventy-two percent of the salmon used by Kake households in 1986 were harvested using non-commercial gear, while 28 percent were harvested with commercial gear. Most salmon was taken with non-commercial beach seine (38 percent). Salmon was also taken with rod and reel, gaff/spear/jig, purse seine, hand troll, and power troll.

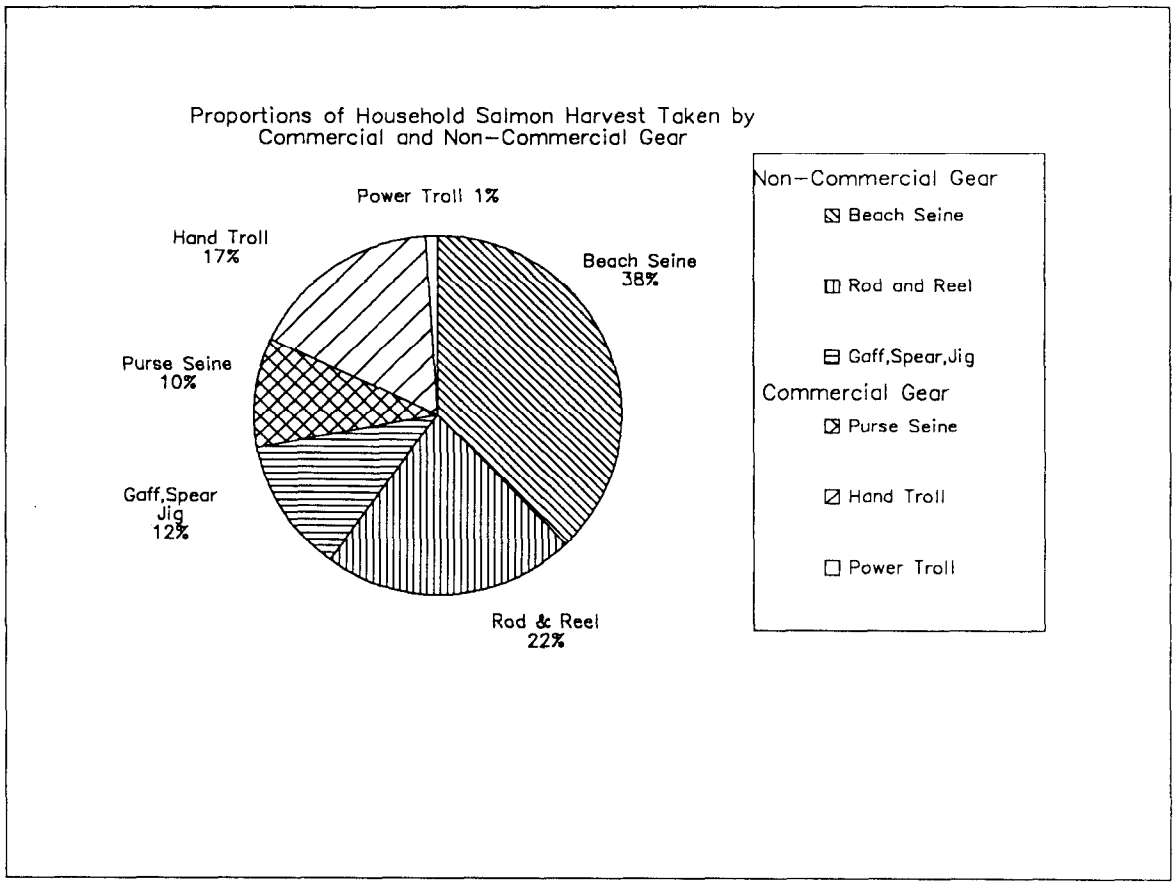


Figure 32. Salmon Harvests by Gear Type, Kake 1985

As shown in Fig. 32, 22 percent of salmon by weight were harvested with rod and reel, a gear type considered in regulation to be a sport use but which is used by many Kake households as another efficient gear type for certain salmon species, as discussed below.

Commercially caught salmon removed for home use contributed a significant portion of the amount of salmon harvested and used by Kake households. Table 7 shows the total pounds of salmon removed from the commercial fishery for personal use and distribution to other households. Households received an average of 65 pounds of salmon (including king, chum, pink and sockeye) from the commercial catch for home use. Of this amount, 18.6 percent was given away.

Figures 33 through 37 show salmon catch by gear type for the five salmon species used by Kake residents. Commercial gear indicates harvest that was retained for home use from a commercial catch, and includes purse seine, power troll and hand troll gear while beach seine, rod and reel, and gaff or spear represented the non-commercial gear.

The state did not recognize that king salmon was a subsistence species at the time of this study and provided no directed subsistence fishery for kings. However, kings have been a traditional food fish at Kake. King salmon used by Kake households were taken with purse seine, hand troll gear, and power troll gear (all of which were operated under commercial regulations) and with rod and reel (Fig. 33). Total harvests of king salmon for home use averaged 3.8 fish per household (Fig. 31). Rod and reel contributed the greatest number of kings for home use at 69 percent of all kings caught. Purse seine was the second most frequently used gear type for harvesting kings (15 percent), followed closely by hand troll (14 percent). In 1989, the Board of Fisheries recognized that there were subsistence uses of king salmon by Kake residents, but as of 1989 had not provided a directed fishing opportunity for kings in the Kake area.

The average number of coho harvested for home use was 6.9 coho per household (Fig. 31). The major gear types used included hand troll (26%) and rod and reel (48%). The remaining fish were taken by beach seine, purse seine, and power troll (Fig. 34).

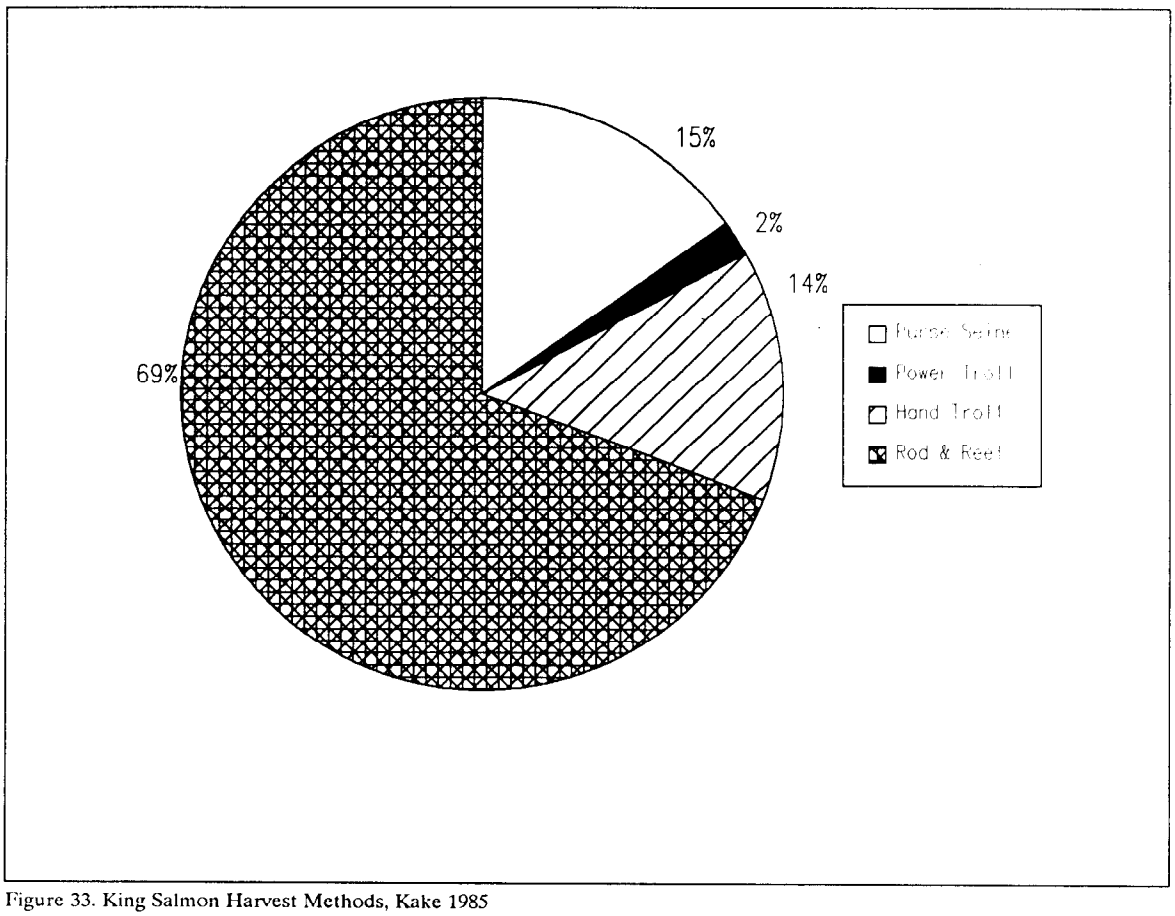


Figure 33. King Salmon Harvest Methods, Kake 1985

Kake households took an average of eight sockeye salmon per household (Fig. 31). Eighty-six percent of all sockeye taken for home use were harvested by beach seine while the remaining sockeye were harvested by purse seine (11 percent), rod and reel (two percent), and power troll (one percent) (Fig. 35).

An average of 11.6 chum salmon were taken per household for home use. Fifty-nine percent of chum salmon were taken by beach seine, 22 percent by gaff, spear or jig, 12 percent by purse seine and two percent by rod and reel (Fig. 36).

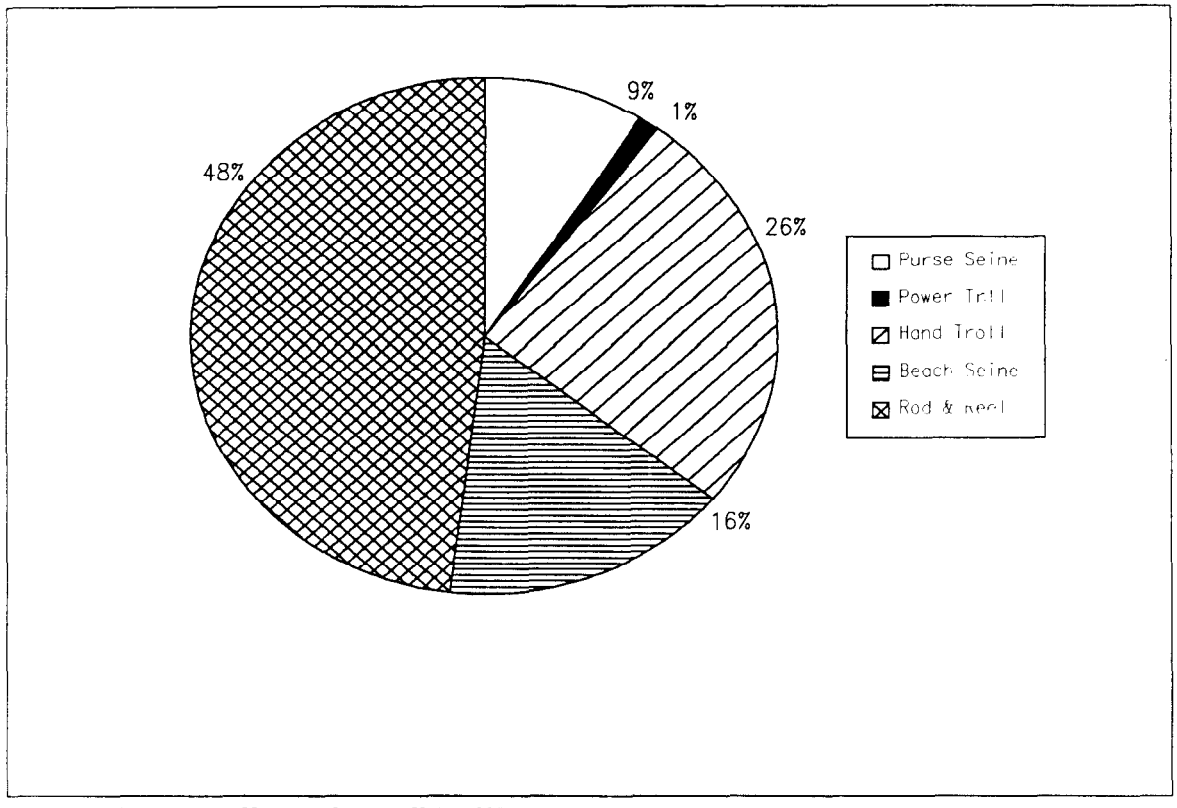


Figure 34. Coho Salmon Harvest Methods, Kake 1985

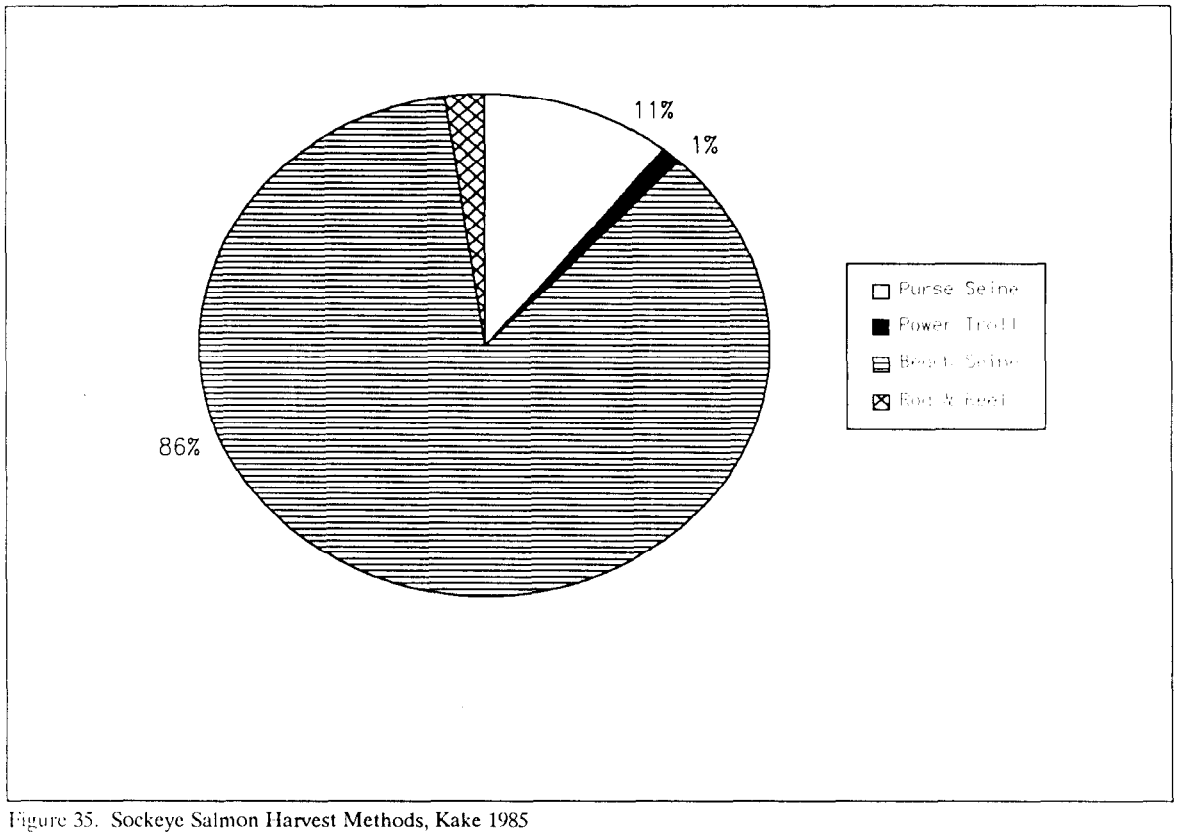


Figure 35. Sockeye Salmon Harvest Methods, Kake 1985

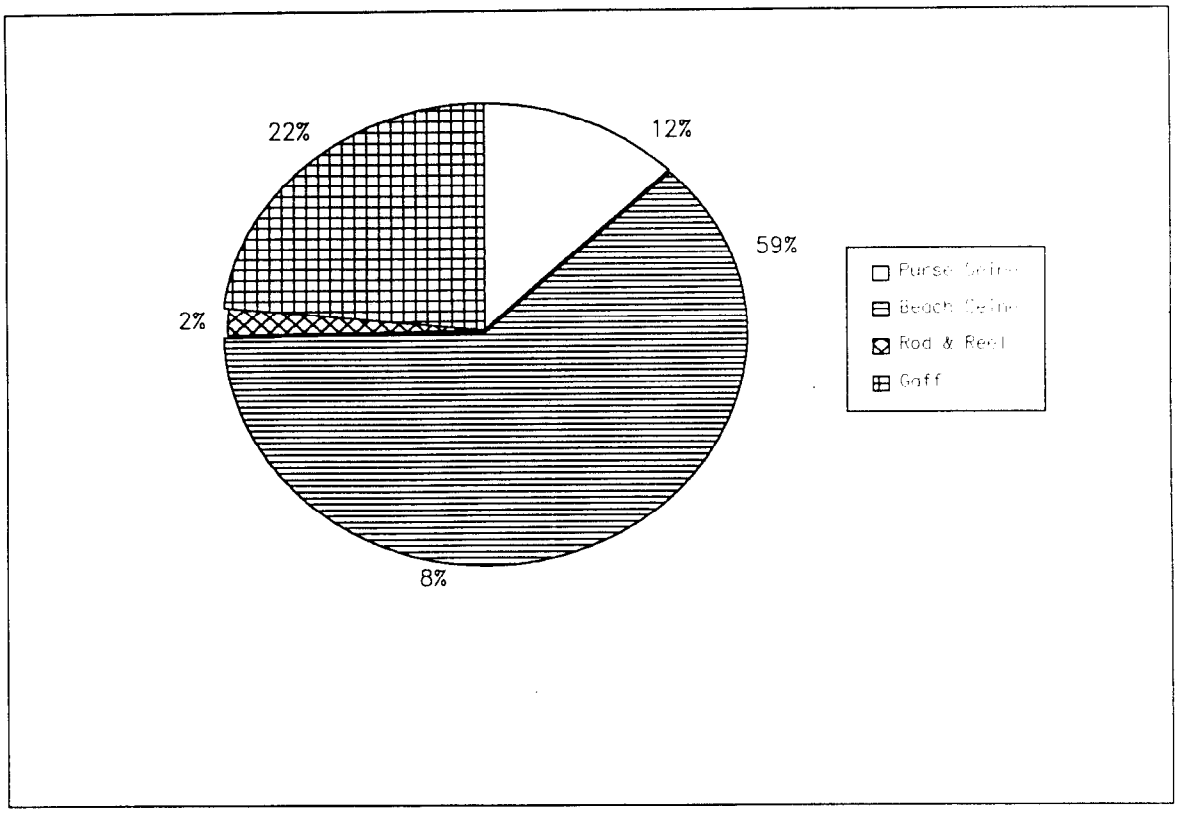


Figure 36. Chum Salmon Harvest Methods, Kake 1985

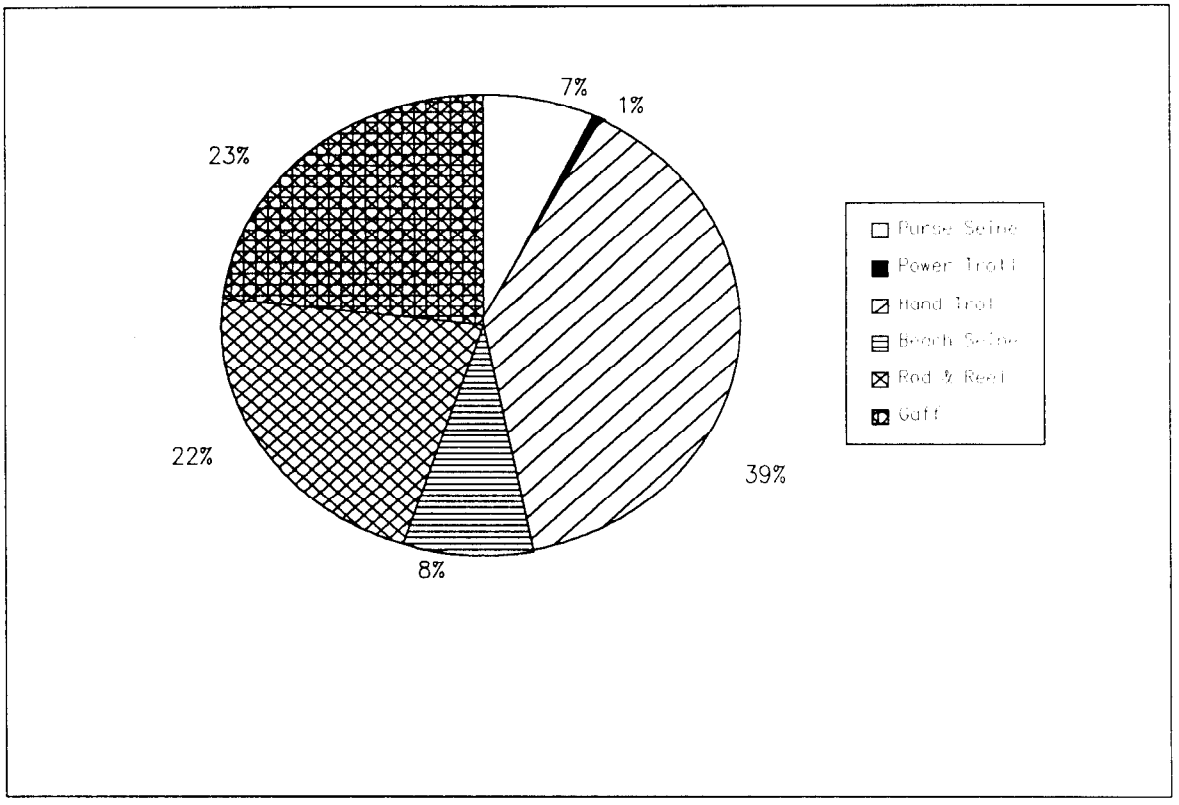


Figure 37. Pink Salmon Harvest Methods, Kake 1985

Pink salmon harvest averaged 10.6 fish per household (Fig. 31). Hand trollers accounted for the majority of the catch with 39 percent, followed by rod and reel (22%) and gaff (23%) (Fig. 37). Eight percent of the pink salmon harvested and used by Kake households came from beach seine gear, while purse seine and power troll gear accounted for seven percent and one percent of the total catch.

As shown by these figures, salmon taken for home use in Kake came from the three different regulated fisheries: subsistence, sport (rod and reel), and commercial. During the year covered by the survey, beach seine, classified as subsistence gear, was the most productive gear type used by Kake households. It was used in harvesting all species except king salmon and accounted for 38 percent of the total salmon harvest. Gaff, also a subsistence gear type, was used to harvest pink and chum salmon and accounted for another 12 percent of the total harvest. Thus, 50 percent of the salmon used by Kake households was harvested using subsistence gear. Rod and reel (technically sport gear) was used for harvesting all salmon species and accounted for 22 percent of the year's harvest. Commercial gear(hand troll, purse seine, and power troll) accounted for 28 percent of the salmon harvested for home use. Salmon from the commercial catch is an important supplement to harvests for many Kake households even though the majority of fish are harvested with non-commercial gear.

Subsistence Salmon Permits

Subsistence salmon fishing takes place today under the terms of a permit system administered by the Alaska Department of Fish and Game. Locations of subsistence permit fisheries and the reported subsistence salmon harvest for the years 1985 and 1986 are reported in Table 9. Harvest limits that restrict catches to ten and twenty-five fish per permit, unpredictable weather conditions, the expense of traveling such a long distance, and the need to obtain new permits or renew existing ones several times per season have led to dissatisfaction with this system. Consequently, people may be harvesting the number of fish they feel they need regardless of regulations. In response to this problem, the Department of Fish and Game implemented a new subsistence permit process for the 1988 fishing season. Each subsistence permit was valid for the entire season and for several areas. Possession limits rather than permit limits were specified on the permits.

Table 9. Subsistence Salmon Permit Harvest Data, Kake 1985, 1986

1985

Location	Number Permits Issued	Number Permits Fished	Number of Fish Reported					Total Number Fish	Total Number Pounds
			Sockeye	Chum	Pink	Coho	King		
Bay of Pillars	85	78	697	0	0	0	0	697	3,903
Falls Lake	17	1	10	0	0	0	0	10	56
Gut Bay	107	42	319	0	0	0	0	319	1,786
Hatchery Ck.	1	1	0	0	0	0	0	0	0
Security Bay	43	37	25	933	0	0	0	958	6,950
Totals	253	159	1,059	933	0	0	0	1,984	12,696

1986

Location	Number Permits Issued	Number Permits Fished	Number of Fish Reported					Total Number Fish	Total Number Pounds
			Sockeye	Chum	Pink	Coho	King		
Bay of Pillars	81	32	622	0	0	0	0	622	3,483
Kake Portage	7	2	0	45	0	0	0	45	328
Falls Lake	2	1	10	0	0	0	0	10	56
Gut Bay	115	63	556	0	0	0	0	556	3,113
Salmon Bay	2	0	0	0	0	0	0	0	0
Security Bay	35	7	0	118	0	0	0	118	861
Totals	242	105	1,188	163	0	0	0	1,351	7,842

Note: In this table the number of permits indicates all requests for fish whether it be the permittee's first, second, or third choice. Thus, if someone requests 12 fish from one location, 8 more from another, and five more fish from a third, they have effectively been issued three permits. Likewise, if two different species are requested from the same location, two permits are considered to have been issued.

Harvest And Use of Deer

As discussed previously, Kake hunters harvest deer on Kupreanof Island and Kuiu Island, Admiralty Island around Gambier and Pybus bays and on the mainland in the vicinity of Sumdum where Kake people once lived (see Figure 19). Figure 38 shows the game management units of these areas. Although Kake is located in Game Management Unit 3, Kake hunters harvest deer in Game

Management Units 4 and 1B also, especially since 1974 when most of Unit 3 (except for Level, Vank, Sokolf, Rydna, Kadin, Coronation and Conclusion islands) was closed to deer hunting.

The 1985-86 deer hunting regulations for Game Management Unit 4 allowed four deer to be taken from August 1 to December 31, and provided for an antlerless deer harvest from September 15 to December 31. In addition, a registration permit hunt for a "late season" in portion of Unit 4 (all drainages on the west side of Admiralty Island from Point Marsden to Point Gardner) was begun in 1984 and continued through the 1986 hunting season. This "late" season ran from January 1 to January 31 with a two deer bag limit. Participants were required to obtain their permits in Angoon. Although Kake hunters harvest deer on the west side of Admiralty, no one from Kake participated in the 1986 January permit hunt. Unit 1B regulations provide for two antlered deer to be taken from August 1 through November 30.

The Alaska Department of Fish and Game, Division of Wildlife Conservation compiles annual harvest information from a mailout questionnaire sent to a random sample of deer harvest ticket holders. Table 10 shows the Kake vicinity deer harvest of randomly sampled hunters from this annual questionnaire. During the 1985 through 1986 hunting season, Kake residents hunted in major harvest units 39, 40, and 41 of Game Management Unit 4 and in harvest unit 16 of Game Management Unit 1b (Fig. 19). One hundred and fourty-four deer were taken in unit 39, with 51 and 8 deer harvested from units 40 and 41 respectively. According to this mailout survey, Kake residents took 17 deer from Unit 16, for a total of 220 deer.

The Subsistence Division survey showed for 1985 that 44.3 percent of the sample households (31 households) hunted deer, spending an average of 2.5 days each. Eighty-five deer were taken by this sample of households, which equates to an average household harvest of 1.2 deer. Expanded to the whole community, this survey showed about 254 deer harvested in 1985. Figure 39 illustrates the distribution of the deer harvest across households in 1985. Most households harvested two or four deer. One household took 8 deer and another took 10 deer.

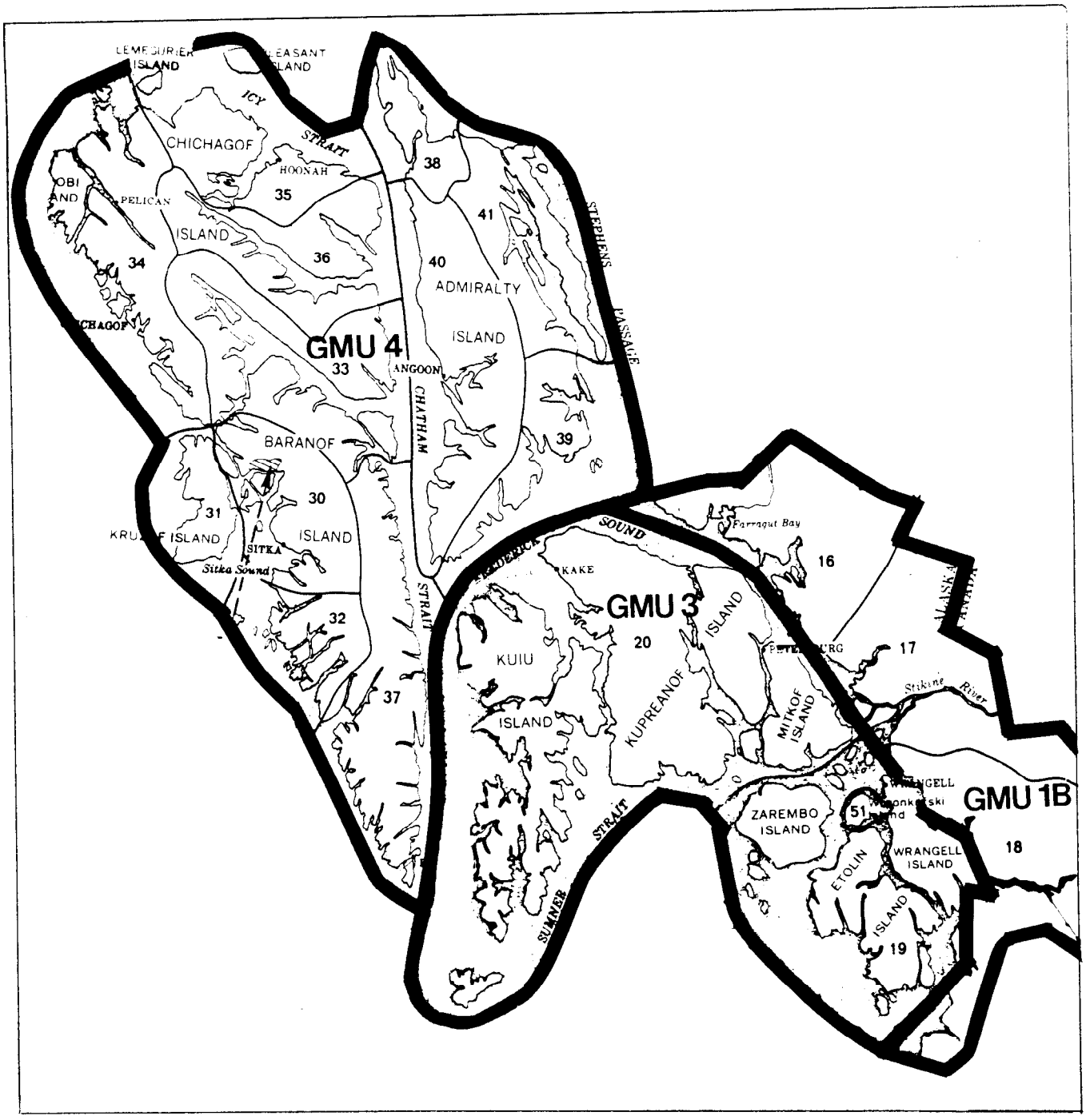


Figure 38. Game Management Units 1B, 3, and 4, Showing Major Harvest Units

Table 10. Deer Harvest by Harvest Unit and Hunter Residence, Kake Vicinity, 1985

Community of Residency	Harvest Area 16	39	40	41	Total Harvest by Residents ofCommunity[1]
Angoon	0	0	243	0	312
Haines	0	0	5	0	289
Juneau	0	137	156	1157	4122
Kake	17	144	51	8	220
Ketchikan	0	21	7	0	2088
Outside SE AK	0	0	8	6	83
Non-residents	0	0	0	4	36
Petersburg	17	446	56	85	1034
Sitka	0	7	7	0	3742
Wrangell	0	32	51	63	437
Totals	34	787	584	1260	12363

[1] Includes harvest in other areas

Source: This information is based on the annual deer harvest questionnaire, which is mailed to a random sample of deer harvest ticket holders by the ADF&G, Division of Wildlife Conservation .

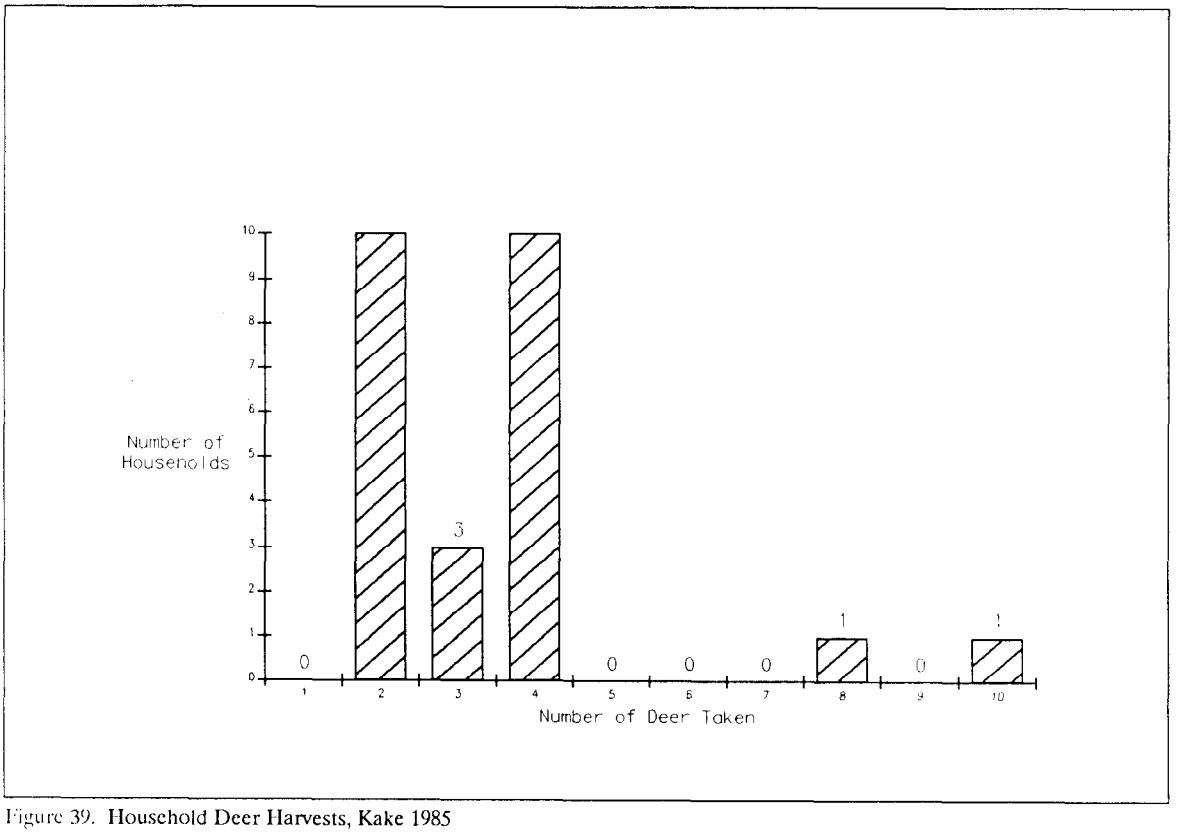


Figure 39. Household Deer Harvests, Kake 1985

Kake hunters share their hunting areas with residents of other Southeast communities and many survey respondents complained of overcrowding by outside hunters (Table 10). Figures 40 and 41 illustrate these regional patterns. In Unit 39, which many people report using as their most preferred area, Kake hunters face strong competition from Petersburg and Juneau residents (Fig. 40). Some Angoon, Petersburg and Wrangell hunters may compete for deer with Kake hunters in southern portions Unit 40 (Fig. 41). GMU 40 is considered by Kake hunters to be traditional Angoon territory and the majority of hunters in that unit are from Angoon. Kake hunters periodically make use of the southern part of this area.

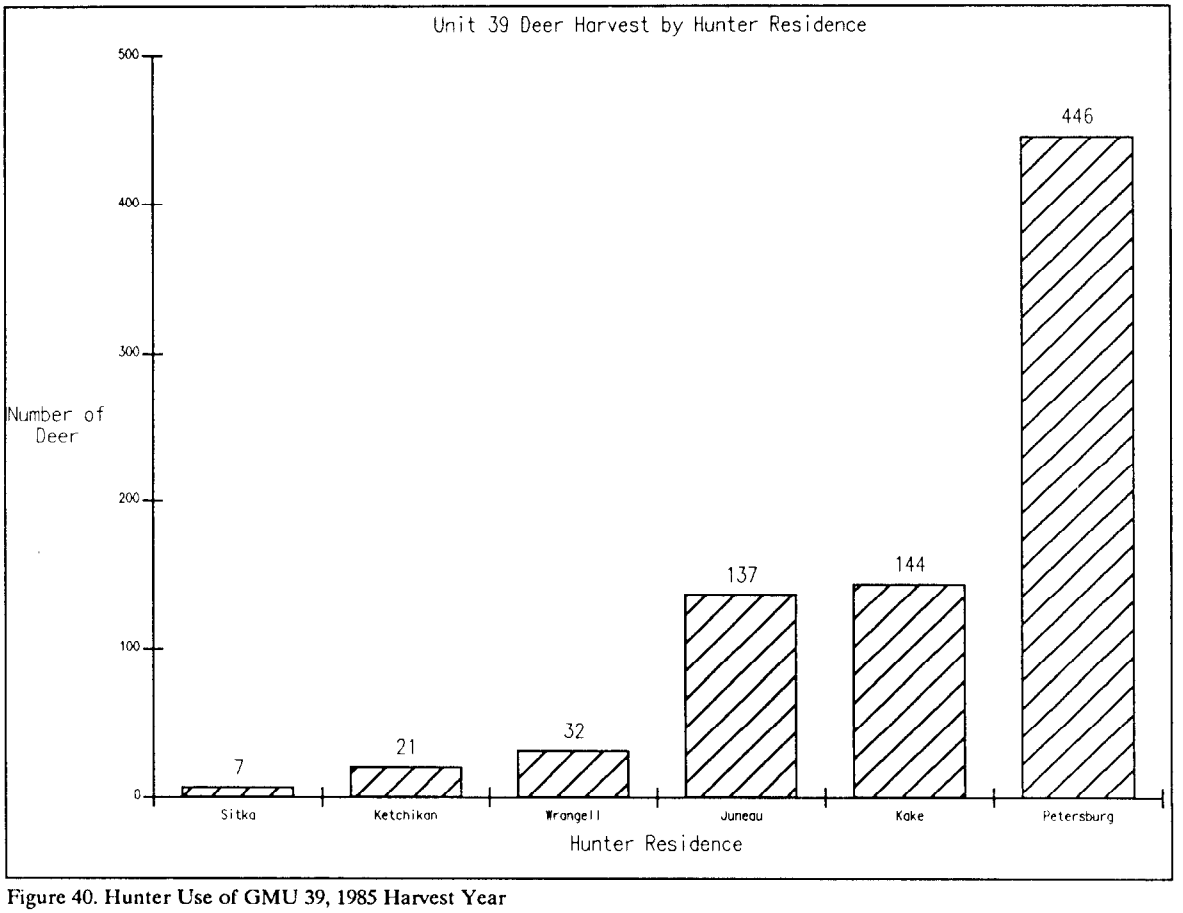


Figure 40. Hunter Use of GMU 39, 1985 Harvest Year

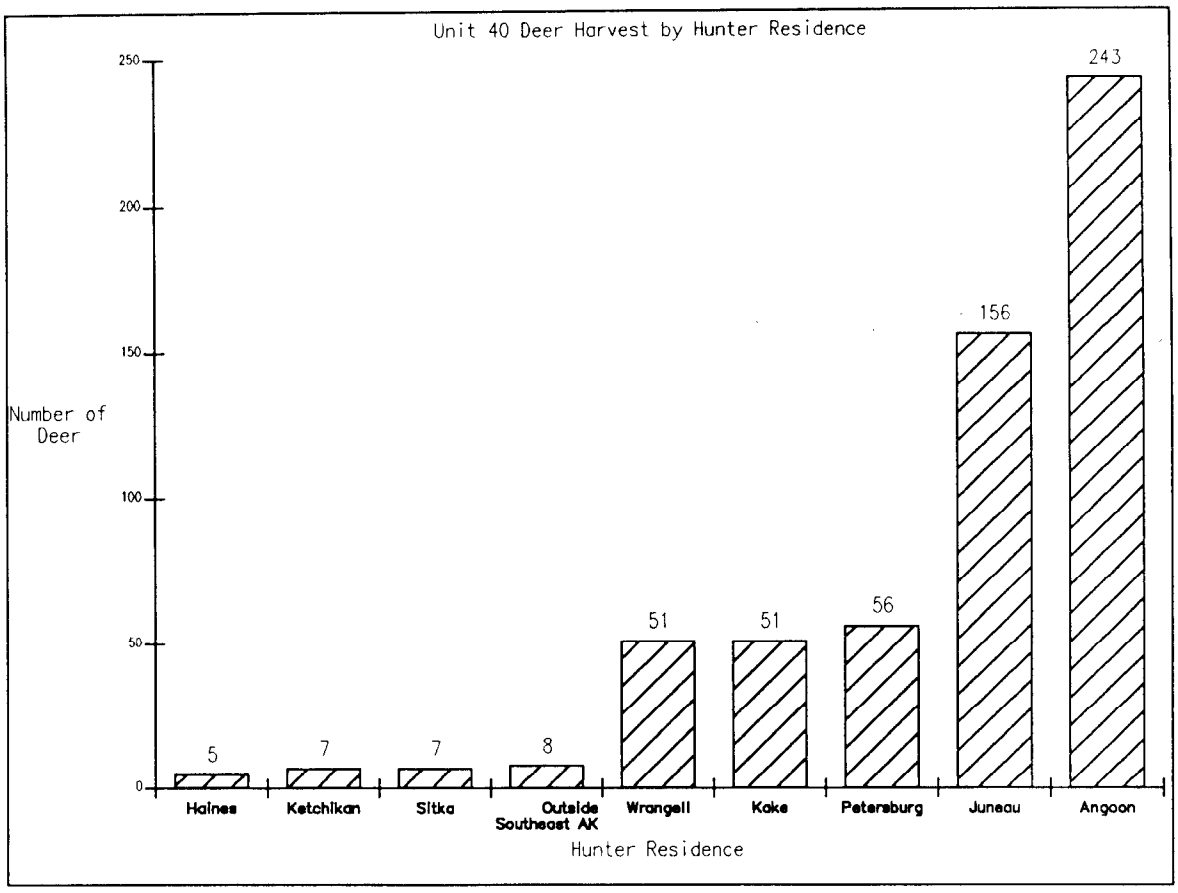


Figure 41. Hunter Use of GMU 40, 1985 Harvest Year

Deer Harvest by Habitat Type and Access

Table 11 shows the number of deer and the habitat type where they were harvested by surveyed Kake hunters who were willing to reveal this information. Sixteen deer each were harvested on beaches and in forested areas, three deer each were taken in muskeg and alpine habitat. Two deer were harvested in young, 0-30 year old clearcuts. No deer were taken in 13-30 year old clearcuts, 31-200 year old clearcuts, or on small islands. The Kake road system is not used for deer hunting, since deer numbers are extremely low and the area has been closed to hunting for several years.

Figure 42 shows access types used by Kake deer hunters in four habitat types during 1985. The most commonly used access type for all habitats was purse seiner followed by skiff. In fact, skiffs are often used in combination with purse seiners.

As one key respondent explains it, six or seven hunters typically go out on a big troll or seine boat, with a small skiff or two tied on. The hunters anchor the large boat in a bay and use the skiff to cruise along the shore and look for deer, occasionally landing on shore either to shoot a deer or to hunt in the woods on foot before returning to the larger boat at night. This hunting strategy, known generally in the region as "beach hunting" is made feasible for Kake residents with the use of large boats for access and for use as floating camps. These hunting trips often last for five or six days at a time. In 1985 a variety of other transportation was used to a lesser extent to access hunting areas. These included cabin cruisers, trolling boats, a landing craft and a crab boat. One key respondent talked about deer hunting with his cabin cruiser. He said that some people even leave Kake in 12 foot skiffs. They make sure they are well equipped, and those in small boats tie up for the night near larger boats. The larger purse seiners and trollers are preferred for hunting and transportation, and sometimes are necessary as the weather in the fall and winter is unpredictable with frequent storms which make crossing Frederick Sound dangerous. As mentioned earlier, the decline of deer populations on the islands around Kake forces hunters to travel across Frederick Sound or Chatham Strait, and makes larger boats the preferred transportation type.

Table 11. Deer Harvests by Habitat Type, Kake 1895

Habitat	Number of Deer*	Percent of Deer
Beach	16	40.0
Forest	16	40
Muskeg	3	7.5
Alpine	3	7.5
0-12 yr clearcut	2	5.0
13-30 yr clearcut	0	0.0
31 yr or older clearcut	0	0.0
Small island	0	0.0
Total	40	100.0

* of the total deer reported harvested by survey respondents, 45 were taken from unknown habitats

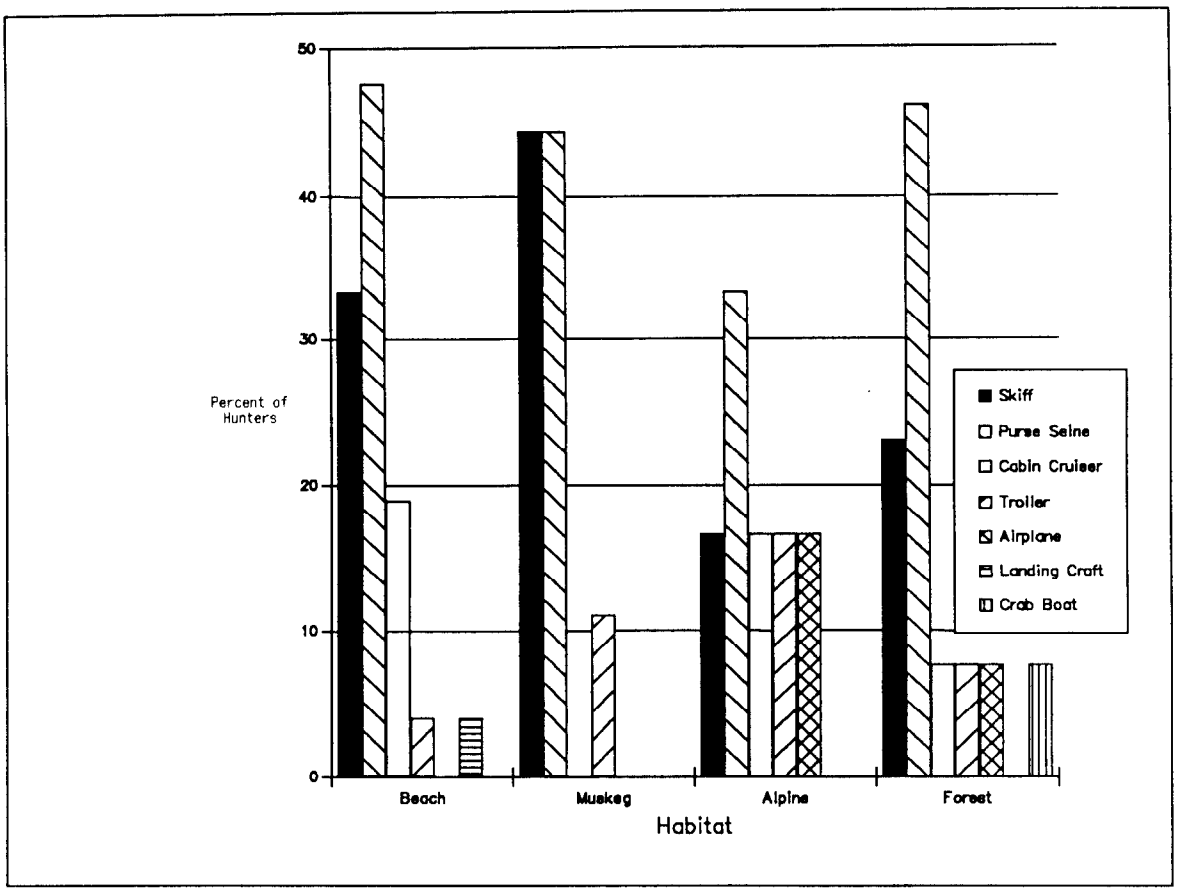


Figure 42. Deer Hunting Access Mode, by Hunt Area Habitat, Kake 1985.

The alpine areas of Admiralty are hunted regularly by some Kake hunters. Eliza Harbor was mentioned as an area where hunters hike to the alpine to harvest deer. Access to Eliza Harbor, as with other areas on Admiralty Island, is generally by boat. Alpine hunting trips generally occur in the late summer and early fall, and frequently coincide with commercial fishing activities.

Desired Levels of Resource Harvest

People in Kake rely heavily on the available local wild food resources to supplement their store bought food. As part of the 1985-86 survey, respondents were asked what percent of the fish, meat, birds and intertidal resources that their households used for one year came from hunting, fishing, or gathering. This question probably produces a general estimated level, rather than a precise estimate, and is useful as a general indication of the perceived contribution of wild foods to the

household. Figure 43 shows the mean estimated contribution for each resource category. Intertidal resources included clams, cockles, gumboots, crab, neets (sea urchin), sea cucumbers and octopus. On the average, households perceived that about 85 percent of the intertidal resources and fish used by their household came from the harvest of wild resources; wild resources contributed 84.5 percent of the household's fish, 28 percent of the meat, and only 4.1 percent of the birds. Respondents were also asked the amount of wild resources that would be needed or desired for their household for one year regardless of Fish and Game regulations. Figure 44 shows the actual mean quantities harvested per household compared to the quantities desired for 10 resources. All desired quantities were higher than the quantities actually harvested. Five deer per household was the desired quantity of deer while 1.2 deer per household were actually harvested. The reduced local deer population, the long distance hunters must travel, and the expense incurred to successfully harvest deer may have contributed to many people obtaining fewer deer than they needed.

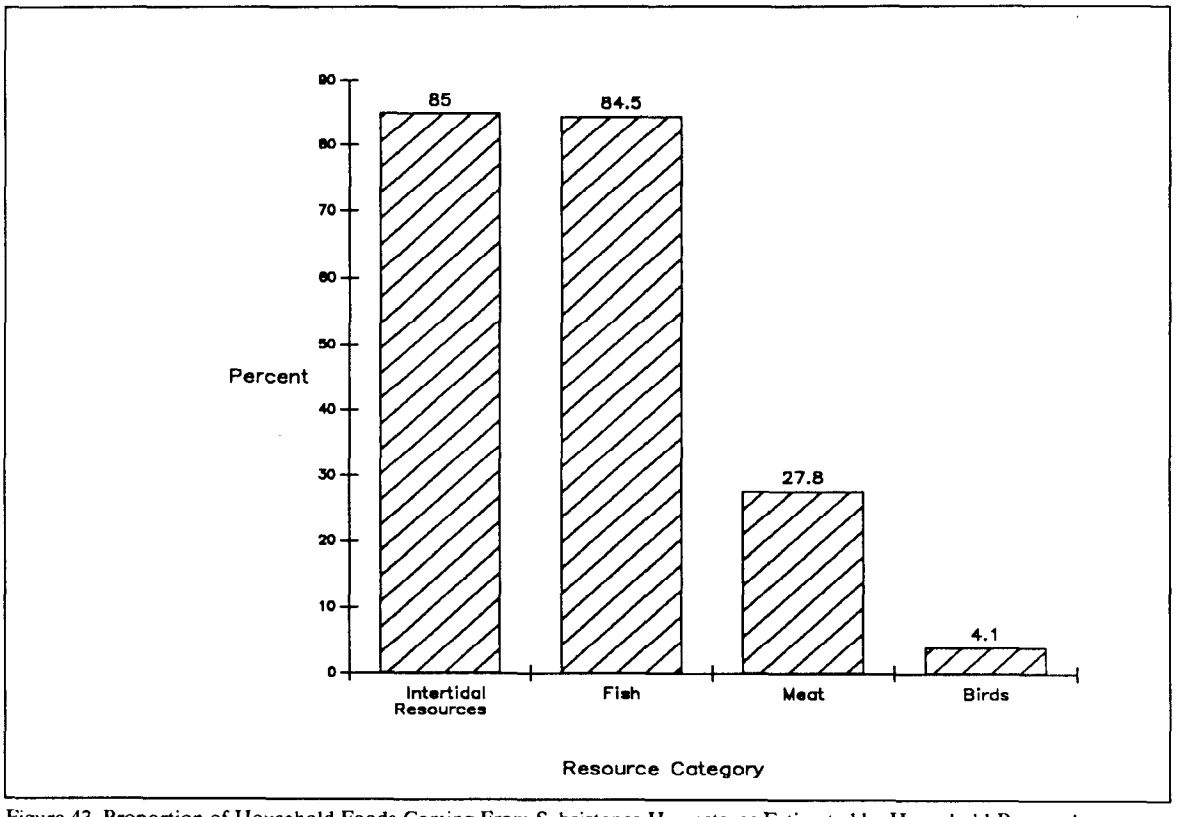


Figure 43. Proportion of Household Foods Coming From Subsistence Harvests, as Estimated by Household Respondent

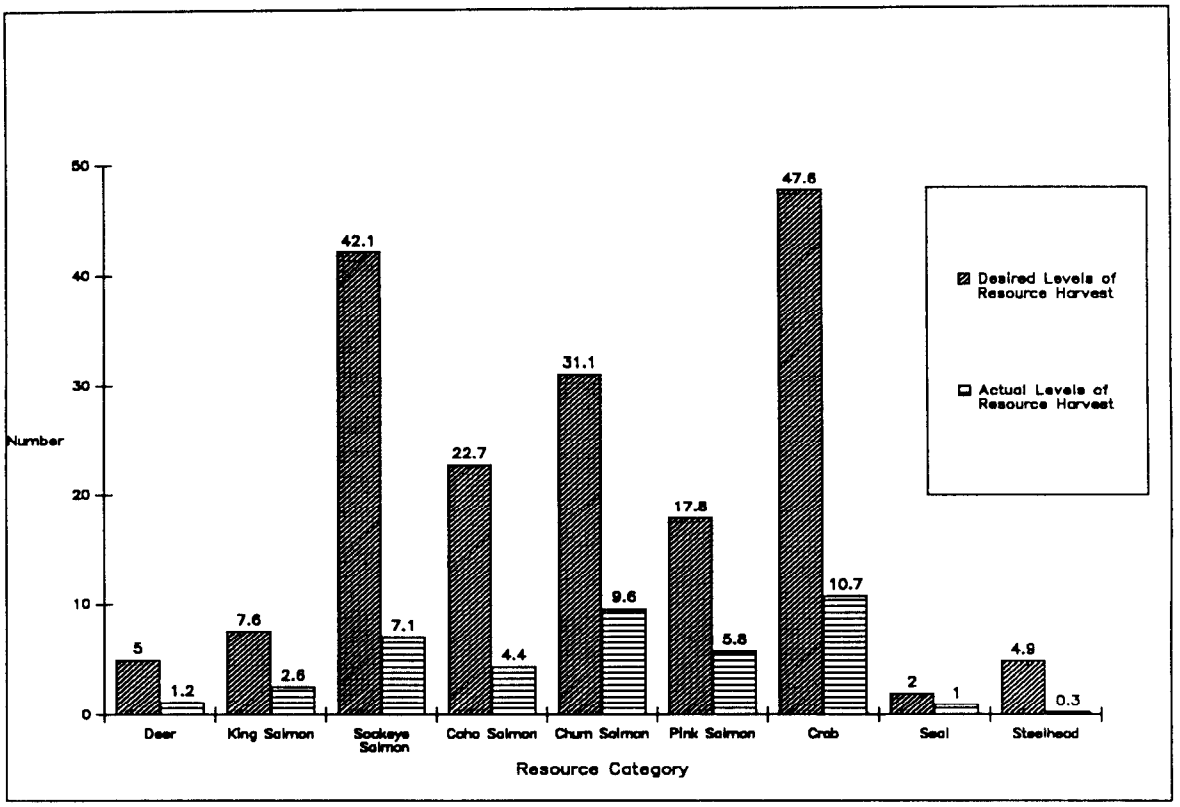


Figure 44. Actual and Desired Levels of Subsistence Harvest

Fourty-two fish was the desired number of sockeye, while the average household harvest was 7.1 fish. Similarly, respondents said they desired a harvest of 31 chum salmon for a year but harvested an average of 9.6 chums. King salmon were harvested at a level of 2.6 per household, while 7.6 were desired. Cohos were harvested at al level of 4.4 per household while 22.7 were desired. Nearly six pinks per household were harvested, while 18 were desired.

Subsistence fishing regulations in 1985-86 allowed for 10 (per person) and 25 (per household) sockeye and 25 (per person or household) chum to be harvested from subsistence harvest areas under the terms of a subsistence permit. As with deer harvest, distance and expense are major factors in limiting the number of times a household can return to harvest areas. As the regulations were written in 1985 and 1986, one permit was good for a specific amount of fish at one location. If a person caught the limit or wanted to fish another area it was necessary to return to Kake, reapply for another subsistence permit and make another fishing trip. According to several respondents, this created a hardship for many people.

Many households who were interviewed mentioned that the cumbersome subsistence permit system and the need to hunt far from their village contributed to their insufficient harvest of salmon and deer. As mentioned previously, Kake people were once spread out in several villages located on different islands and the mainland, and as a result their traditional harvesting areas, particularly for salmon and deer, are a long distance from the present site of Kake. In addition, deer populations on Kupreanof Island and adjacent Kuiu Island, the traditional deer hunting areas closest to Kake, have remained low since the mid 1970s, forcing people to hunt farther away.

CHAPTER FIVE

CASE STUDIES OF CHANGING SUBSISTENCE ACTIVITIES

This chapter describes geographic patterns of change in deer hunting over the past 50 years within discrete subunits of the Kake subsistence harvest area. Four case studies were developed from interviews with key respondents, combined with information obtained from the random household survey. Subunits on east Baranof Island, north Kuiu Island, north Kupreanof Island and south Admiralty Island were aggregated for the purpose of developing four case study analysis areas. Shaded areas on Figure 45 indicate the location of the geographic subunits that were used for case studies.

The case studies section is divided into two parts. First the trends in the use of all four case study areas are discussed. That section is followed by a description of each study area, including historic and contemporary uses of the area and a discussion of the factors responsible for observed changes in deer hunting patterns.

GENERALIZED TRENDS IN USE OF DEER HUNTING AREAS

Kake residents' use of the islands of Baranof, Kupreanof, Kuiu and Admiralty for deer hunting has changed substantially over the past four decades. These changes are discussed here decade by decade beginning with the 1950s. Although the survey recorded hunting effort prior to the 1940s, the number of survey respondents old enough to recall hunting during that time was to small for meaningful statistical analysis. So the discussion here begins with the 1940s and 1950s.

Figure 46 graphically represents the hunting trends of Kake residents over three transitional decades: the 1950s, 1960s, and 1970s. During the 1950s, Kake residents concentrated their hunting efforts on northern Kupreanof Island at Rocky Pass and inland, on south Admiralty (mostly at Pybus Bay), and on northern Kuiu Island. Additionally, a small percentage of people harvested deer on southeast Baranof in the vicinity of Port Alexander. Changes began to occur in the hunting patterns of

the Kake people in the 1960s with a gradual shift away from northern Kuiu Island to Kupreanof Island. Rocky Pass, Pinta Point and the Keku Strait areas of Kupreanof Island received the most use. Kake residents continued harvesting deer at Pybus Bay on south Admiralty. On Baranof Island, Gut Bay replaced the Port Alexander area as a preferred hunting location.

In the early 1970s, residents of Kake began shift their hunting to Admiralty Island, and decreased their use of Kupreanof Island. The principal factor that appears to be responsible for this shift is a decline in the deer population on Kupreanof and Kuiu islands, thought to have been caused by a combination of three consecutive heavy winters, wolf predation, and habitat alteration. Hunting on Kuiu Island and Kupreanof Island virtually ended when deer hunting was closed by regulation on those islands in 1973. As will be seen from the case study descriptions, a corresponding increase in deer hunting took place during those years on Admiralty Island, especially in the Eliza Bay and Point Gardner areas.

Currently, as in the early 1980s, residents of Kake do the majority of their deer hunting on Admiralty Island with occasional trips to Baranof Island in the vicinity of Gut Bay and north along the eastern shore. Detailed descriptions of these shifts in hunting areas are provided in the case narratives that follow.

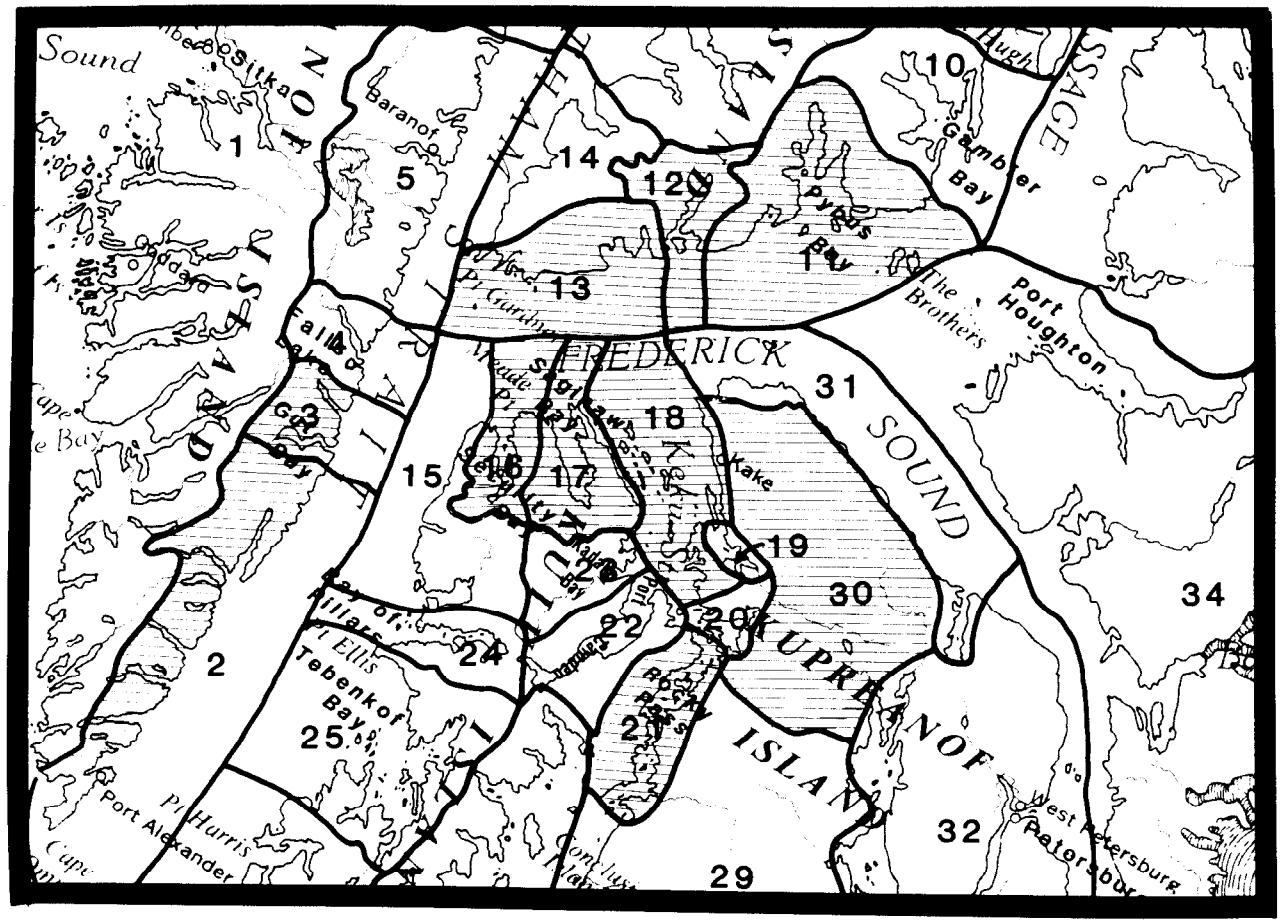
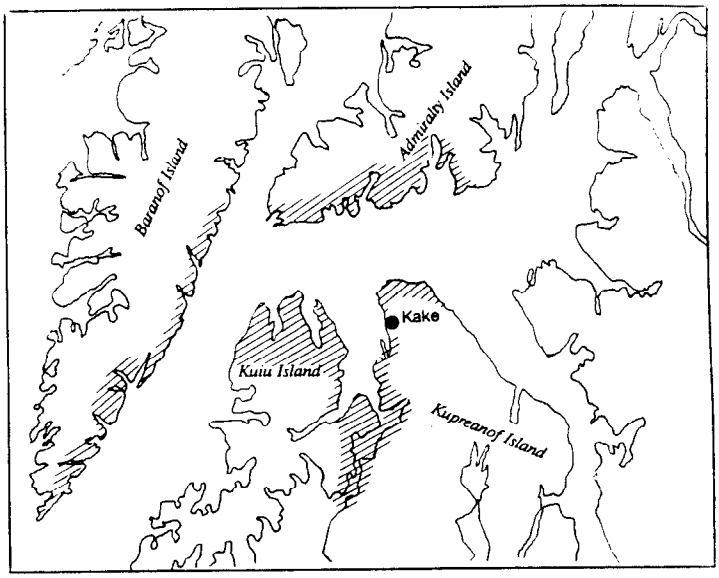
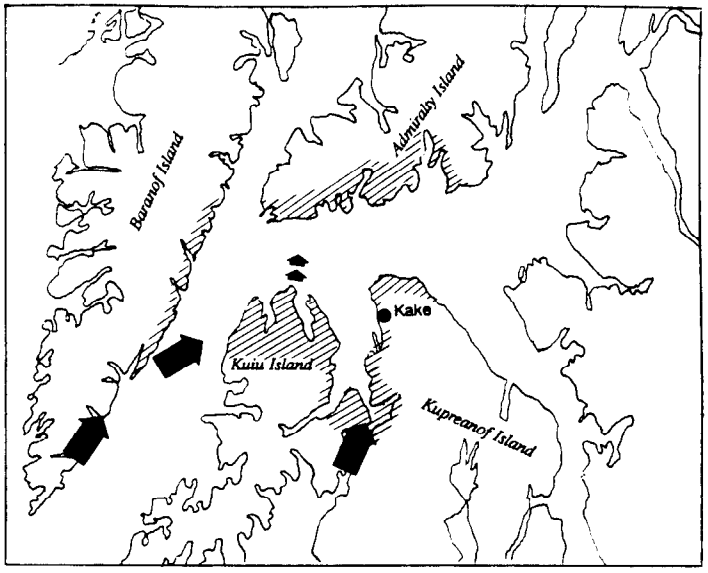


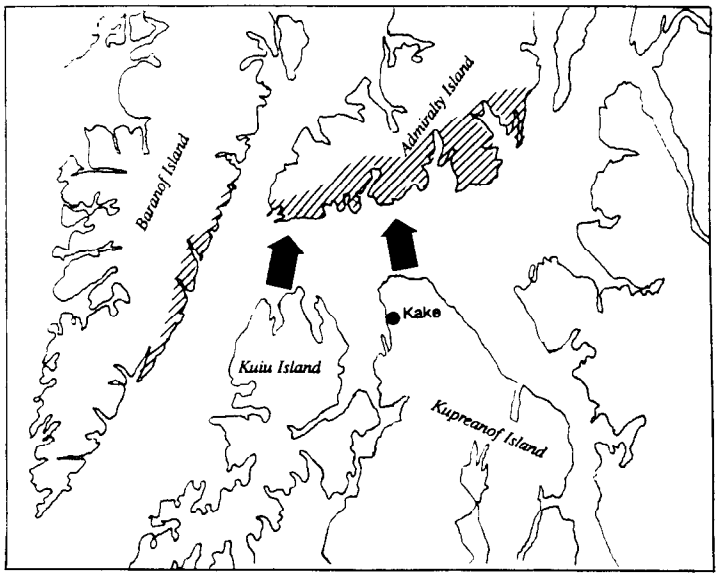
Figure 45. Case Study Subunits of the Kake Subsistence Harvest Area: East Baranof Island (Units 2 and 3); North Kuiu Island (Units 16 and 17); North Kupreanof Island (Units 18, 21, and 30); South Admiralty Island (Units 11, 12 and 13).



1950s: Hunting areas include portions of Baranof, Kuiu, Kupreanof and Admiralty Islands

1960s: Changes in commercial fisheries result in less hunting in Port Alexander area, less use of Rocky Pass, increased use of Kuiu and Admiralty Islands





1970s: Crash of deer population in early 1970s leads to abandonment of Kuiu and Kupreanof Island hunting areas, increase in use of Admiralty Island.

Figure 46. Generalized Shifts in Deer Hunting Use Areas, 1950s, 1960s, 1970s, Kake.

SOUTHEAST BARANOF ISLAND CASE STUDY

The Southeast Baranof Island case study area covers the shore line and uplands of Baranof Island, about 38 miles to the west of Kake, across Keku and Chatham Straits (Figure 45). The area is accessed from Kake by the use of skiffs, power cruisers, and seine boats. Analytical Subunits 2 (Port Alexander) and 3 (Gut Bay) are included in this case study area.

Historic and Contemporary Use of Southeast Baranof Island

Port Alexander, on the southern tip of Baranof Island, was a busy commercial fishing town from the early to the mid-1900s. Port Alexander attracted commercial fishermen from Kake and elsewhere who sold their catch to processors in Port Alexander. Some Kake people also worked in the canneries and owned houses there. Drawn by the commercial fishing industry to southern Baranof Island, Kake people also hunted in the area. During the 1980s, the situation was different. Although seining, trolling, crabbing, and fishing for halibut and sablefish still take place off the coast of Baranof Island, today Kake fishermen sell their catch in other towns than Port Alexander or sell to floating processors and rarely remain in the vicinity of southern Baranof long enough to hunt.

Historically, Kake people shared the use of the Gut Bay area with residents of Angoon. Gut Bay was and still is an important subsistence salmon fishing area. Subsistence fishing at Gut Bay targets sockeye salmon. This activity, which occurs in July, does not coincide with the hunting season, which begins in August. Use of the Gut Bay area for deer hunting was recorded in the survey beginning about 1959. This timing coincides with declining use of both Kuiu and Kupreanof islands, as discussed below.

Patterns of Use of Southeast Baranof Island for Deer Hunting

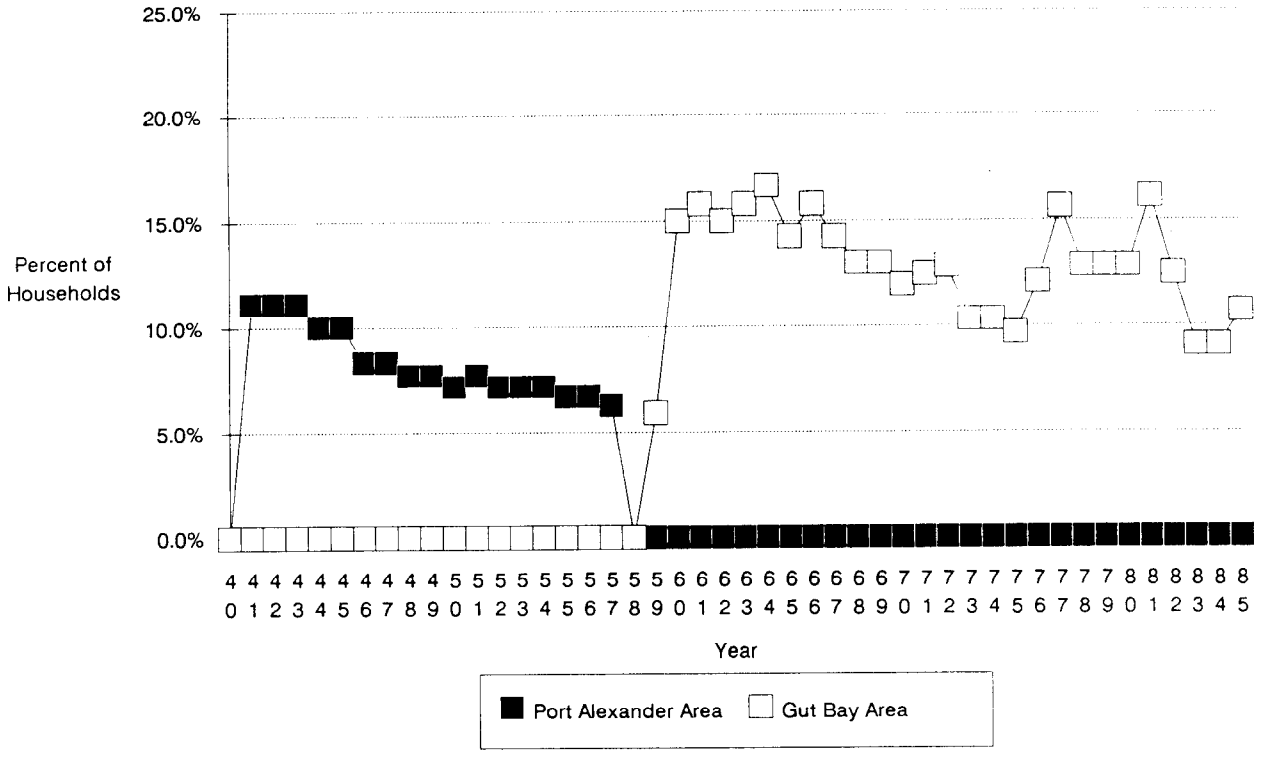
Changes in the use of southeast Baranof Island over time by survey respondents are shown in Figure 47. Approximately ten percent of the survey respondents used the Port Alexander area for deer hunting during the early 1940s with use gradually declining and stopping altogether by the early 1960s.

Although Kake people have traditionally hunted and fished the east coast of Baranof Island, none of the survey households show use of the Gut Bay area for deer hunting until 1959. The probable reason for this is that Kake residents were taking sufficient deer on Kupreanof Island closer to Kake prior to 1959 and did not need to hunt further away on Baranof Island. This is discussed in the case study for north Kupreanof Island, which shows that as many as 50 percent of the active Kake deer hunters used north Kupreanof Island subunits from the early 1940s through the mid 1960s (Fig. 49).

The early years of use of the Gut Bay area for deer hunting coincide with years of declining use of Kupreanof and Kuiu islands, although survey respondents could not recall whether this represents an actual shift in use areas. Even after Kake people began hunting at Gut Bay the area was not heavily used, as less than 17 percent of the survey respondents have ever used or still use the Gut Bay area for deer hunting. Figure 47 shows use fluctuating between ten and seventeen percent of all active deer hunting households from 1959 to 1985. As mentioned above, this hunting generally takes place following sockeye salmon fishing.

The overall amount of use of southeast Baranof Island has not been as great as the use of Kuiu, Admiralty and Kupreanof islands for several reasons. First, as mentioned above, in the early years deer appear to have been available in areas closer to Kake than Baranof Island. Southeast Baranof Island was predominantly a fishing area, and was not the exclusive territory of the Kake Tlingit, but was shared with Angoon people. Additionally, the demise of Port Alexander as a commercial fishing center resulted in Kake fishermen spending less time in the area of southeast Baranof Island and hunting there less often. Finally, environmental hazards such as rough water around the southern end and steep topography on the east side made Baranof Island a less desirable place for Kake people to hunt.

Figure 47. Use of Areas on Southeast Baranof Island for Deer Hunting by Kake Households, 1940-1985



NORTH KUIU ISLAND CASE STUDY

Kuiu Island is located eight miles west of Kake. The northern half of Kuiu Island was described in Chapter Four of this report as an important resource use area for the residents of Kake. It is reached with the use of skiffs, cabin cruisers, and seine boats. Geographic analysis subunits 16 (Security Bay), and 17 (Saginaw Bay) are included in the North Kuiu Island case study (Fig. 45).

Historic and Contemporary Use of North Kuiu Island

Village sites in Security, Saginaw and other bays on north Kuiu Island were former residences of the Kuiu Tlingit who relocated to Kake village on Kupreanof Island in the early 1900s. These Kuiu Island villages are documented in historical accounts of traders, travelers, military men and anthropologists who visited Kuiu Island and are discussed in more detail in Chapter Two.

Kake oral history indicates that three village sites were located at Security Bay, one near the mouth of the bay and at least two others located further up the bay. Some of the evidence suggests that one of the settlements in Security Bay was a major village, probably second in size only to Kake Village. These major villages were associated with a configuration of smaller villages and family habitation sites. In the 1800s these villages in Security Bay were the targets of bombings both by the Russians and the U.S. Navy (cf. Price 1988).

In 1944, an informant for Goldschmidt and Haas testified that Security Bay was called Kuteq and was where the *Katcadi* (or *Qatcadi*) clan had their main camp. It was an important bay for food gathering and the mouth of the bay was a stop-over place for trollers, having been used since "olden days". This informant also related that the coast south of Security Bay was used for trapping.

Key respondents for the present survey talked about early Tlingit-type salmon traps they saw in Security Bay which were made of piles of large rocks laid across the current of a stream, or of semi-circular rock walls on the beach. Salmon would become entrapped in the rocks and were easily harvested. According to Campbell (1982), the stone traps crossing the mouths of streams were used to catch silver and sockeye salmon while circular stone traps caught pink and chum salmon. Key

respondents also said that Security Bay was used by the *Saqtenedi* which meant that this clan may have acquired rights to hunt and fish in the area from the *Katcadi*.

In the 1980s, residents of Kake continued to subsistence fish for chum salmon in Security Bay in late fall, although the fish camps were no longer used. Commercial fishing for all types of salmon also occurred there.

Saginaw Bay is another area on north Kuiu Island to which the Kake Tlingit have important historical ties. Historically it has been the location of both year round villages and seasonal hunting and fishing camps. One key respondent was raised in Saginaw Bay until the mid 1920s. He said Saginaw Bay belongs to his father's clan, the *Tsagwadee*. He remembers gardening and hunting there. He recalls that his father taught him how to make a deer call out of red cedar when they were living there. Recalling that his father was fussy about what the call sounded like, he said, "It had to sound natural".

Another key respondent, born in Saginaw Bay in 1922, used to put up deer, smoke fish, pick salmon berries and huckleberries, and salt ducks when she lived there.

According to a Kake resident interviewed by Goldschmidt and Haas, Saginaw Bay, called *Skanax*, belonged to the *Teoquedi* Clan. In the 1940s, at the time of the interview, the bay was used for hunting and for salmon and halibut fishing. A trolling camp was located at the mouth of the bay.

Saginaw Bay was the site of commercial development when the fishing industry expanded in southeast Alaska. In 1903 and 1904, fish were sent to Japan from a herring saltery that operated in the bay, and a salmon cannery built in 1918 operated several seasons before being abandoned. Another company built a new cannery at the same location in 1943 and operated it for about five years. A key respondent who had come to Alaska in 1942 to work seasonally for fish buyers and canneries worked at the Saginaw Bay Salmon cannery in 1943. She and her husband became caretakers at the cannery where she trapped mink, river otter, marten and wolf. For wolves she would receive a 50 dollar bounty in addition to the market value for the hide.

During the 1980s, subsistence fishing occurred in Saginaw Bay. However, Kake residents no longer made use of their seasonal camps. They returned to Kake to process their catch at home. Contemporary use of Saginaw Bay during the 1980s also included commercial fishing.

Patterns of Use of North Kuiu Island for Deer Hunting

Changes in the use of Saginaw and Security bays for deer hunting by survey respondents from 1940 to 1985 are presented in Figure 48. Approximately 25 to 37 percent of the active Kake hunters used Saginaw and Security Bays for deer hunting in 1940. These areas experienced continuous use during the 1940s and early 1950s by around 25 percent of households. During the 1950s, household use decreased, and by 1960 had dropped to approximately 15 percent. At that time there was a gradual shift in hunting from Kuiu Island to northern Kupreanof Island and southern Admiralty island. During the late 1960s use fell again, so by the early 1970s northern Kuiu Island was used by less than one percent of the active hunters. By 1975, this area was no longer used by Kake residents for deer hunting (Fig. 48).

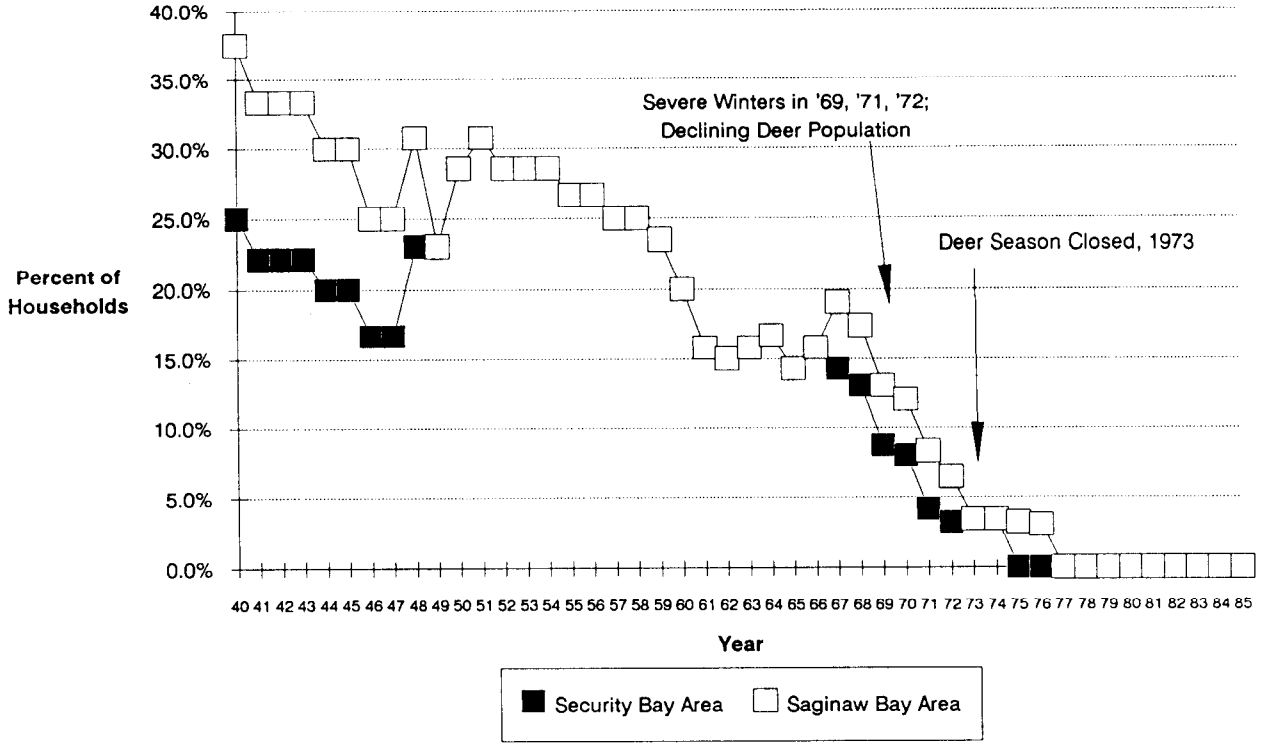
The decline in the deer population is the main reason for cessation of use of North Kuiu Island for hunting during the 1970s. According to Alaska Department of Fish and Game biologists the deer population, which fluctuates under normal conditions, suffered from three successive severe winters in 1968-69, 1969-70, and 1971-72. The population may have been able to rebound from one hard winter but was apparently unable to recover from three consecutive ones and crashed to recorded low levels by 1973. As a result, the deer season was closed by regulation in 1973 after the hunting season was over and it remains closed today.

This explanation of the deer decline in the Kake vicinity does not explain the fact that deer hunting on North Kuiu Island began to decline in the late 1950s and 1960s, prior to the 1970 through 1973 deer population crash. According to Alaska Department of Fish and Game records, there were no indications of problems with the deer population on Kuiu Island during these years. However, detailed systematic measures of deer populations were not made for North Kuiu Island. Conceivably, wolf predation or other biological factors may have been operating, and deer populations may have

been declining prior to 1970, accounting in part for some of the declining use. This reasoning is commonly voiced in Kake today, and it would help explain why the deer population in this area was particularly hard hit by subsequent adverse winters.

Additionally, social factors may account for part of the declining use during the late 1960s. New employment opportunities became available when a logging camp opened at Kake in 1968. Logging jobs may have kept hunters closer to home who would otherwise have been hunting North Kuiu Island. Survey respondents did report that some job opportunities were available even in the early years of timber harvest activity. However, the effect of jobs on use of North Kuiu Island is not known. Probably an interplay of factors operated to shape the community hunting patterns of this area. Nevertheless, a decline of deer on Kuiu Island, relative to other areas, over a twenty year period (late 1950s-late 1970s) seems the most likely factor accounting for declining use.

Figure 48. Use of Areas on North Kuiu Island for Deer Hunting by Kake Households, 1940-1985



NORTH KUPREANOF ISLAND CASE STUDY

The town of Kake is located on the northwest corner of Kupreanof Island. Subunits 18 (Keku Strait), 30 (Roaded Area), and 21 (Rocky Pass) are included in this case study area (Fig. 45). Keku Strait and Rocky Pass separate Kupreanof Island from Kuiu Island. The Keku Strait subunit is composed of the Keku islands, the shoreline from Pt. Macartney to the southern tip of Hamilton Island, Hamilton Island, Kakaneek Bay and Davidson Bay. Rocky Pass includes the land that extends approximately a couple of miles inland from the shorelines of Kuiu and Kupreanof islands. The Roaded Area includes the meandering logging road system, which began to be built in 1968, and adjacent land. Figure 9 illustrates the location of logging roads and associated clearcuts on Kupreanof Island.

Historic and Contemporary Use of North West Kupreanof

Traditionally, Kupreanof Island was shared by both the Kake and Stikine Tlingit. The Kake Tlingit occupied the western half while the Stikine had rights to the eastern half of the island.

Most of the nine Kake clans lived on islands near Kupreanof Island or on the mainland, and they all eventually migrated to western Kupreanof Island, as described in Chapter Two of this report. Two of these clans, however, appear to have lived historically at the present site of Kake as no origin myths have been collected describing them as having come from elsewhere (Campbell 1988). The oldest clan, the *Sitkwedi* are believed to be the people whom the Tlingit encountered when they first arrived in Southeast Alaska and the other clan is thought to be made up of households from the *Tanedi* clan (Campbell 1988).

According to key respondents, during the early 1900s the islands in Keku Strait were the sites of seasonal camps where gardens were tended, and shellfish and seal were taken. Prior to the 1970s, herring and herring spawn were harvested in the waters of Keku Strait. Additionally, the area has always been a convenient commercial fishing ground for Kake residents. Trapping, waterfowl hunting,

and subsistence fishing took place on the Kupreanof Island side of Keku Strait. During the 1980s, Keku Strait was still used for harvesting crab and clams and for commercial fishing.

Historically, Kake residents used the nearshore and some upland portions of North Kupreanof Island for trapping wolf, beaver and other furbearers (Fig. 23). Nearshore portions of the area were used for deer hunting. However, in recent years participation in trapping has declined and deer hunting has been closed since 1973. Subsistence trapping use of the western edge of Kupreanof Island has declined. During the 1980s the roaded system on west Kupreanof Island was used mostly for recreational travel, access to berry picking areas, and for occasional grouse hunting.

During the 1900s, Rocky Pass was an important subsistence use area for Kake people, where fish camps, deer hunting camps, and traplines were common. Seal hunting, clamming and waterfowl hunting often occurred in Rocky Pass. A key respondent said that her father had a camp in Rocky Pass where she remembered picking berries and drying meat. She lived in the camp and came to Kake when school started.

The drop in the price of fur, the use of larger boats, which made navigation of the rock-strewn pass difficult, and the closure of the deer season all contributed to a decline in the use of Rocky Pass. During the 1980s, the area was used mostly for waterfowl hunting and some seal hunting.

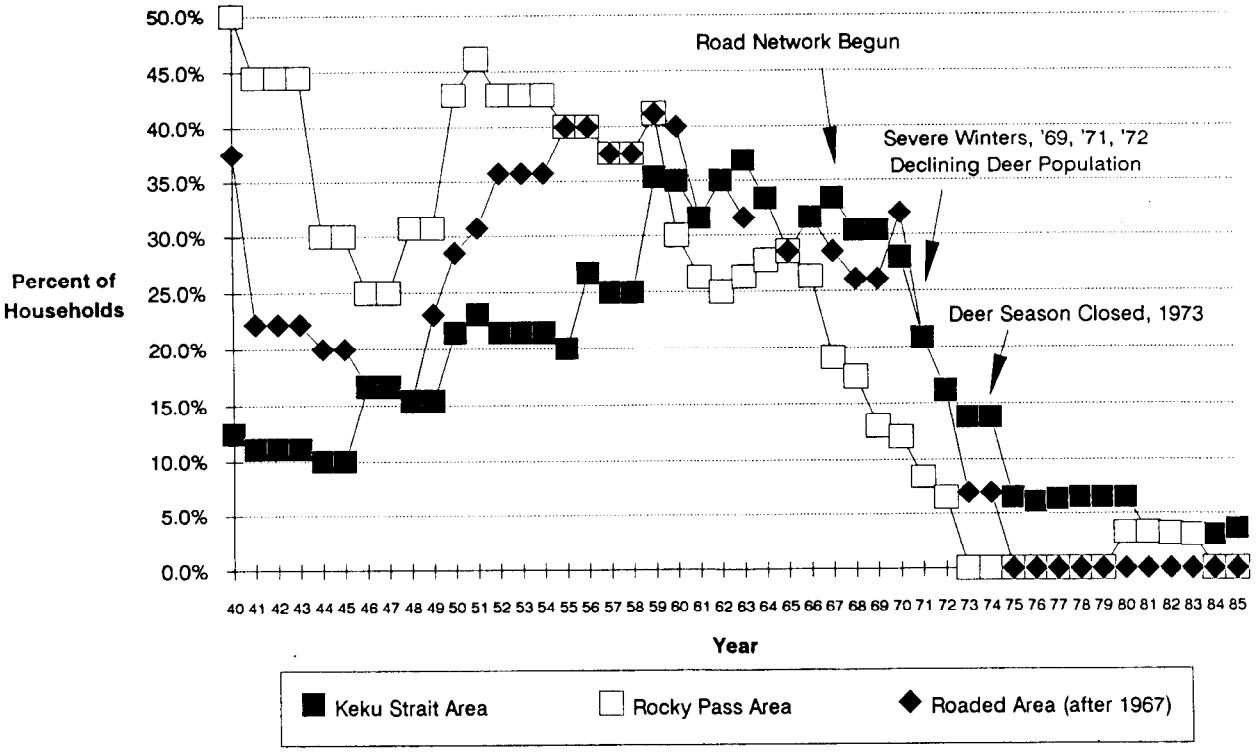
Patterns of Use of North Kupreanof Island for Deer Hunting

Change in the household use of the islands in Keku Strait, the roaded area and Rocky Pass for deer hunting through time is illustrated in Figure 49. Keku Strait and the Roaded Area show an increase in use from the mid-1940s (about 15%) to a peak in about 1959-60, about 40-46 percent of hunters for the roaded area and 30-35 percent for Keku Strait. There is a gradual decline (use dropping to 25-30 percent) beginning in the early 1960s. A major drop in deer hunting occurs after 1970, until hunting ceases by 1975. Deer hunting in Rocky Pass shows a drop during the 1950s, a slight rebound in the early 1960s, and then a steady fall after 1965. It appears that people hunted the islands in Keku Strait for a couple of years longer than they hunted on Kupreanof and Kuiu islands, suggesting

the possibility that deer populations in these areas may not have declined as quickly as those on the larger islands of Kuiu and Kupreanof. However, no biological data are available to confirm this.

The decline in use of Kupreanof Island predated the heavy winters of 1960-72 and the deer population crash by several years (the decline begins by the late 1950s), as was the case on Kuiu Island. It is probable that a decrease in deer numbers was perceived by local hunters, relative to deer populations on Admiralty Island, to which hunting effort was shifted. As suggested earlier, it is possible that jobs in the new logging industry also interrupted hunting activities for some individuals. This shift away from Kupreanof Island to Admiralty Island occurred a decade after the time when Kake fishermen modernized the commercial fishing fleet, purchasing larger, more technologically advanced fishing boats. These larger boats were unable to negotiate Rocky Pass, but were well suited to make the longer, occasionally stormy crossing of Frederick Sound, thus enabling safe access to abundant deer populations on Admiralty Island. Severe winters in 1968-69, 1970-71, and 1971-72 and the closure of deer season in 1973 on Kupreanof Island would explain why Kake residents ceased hunting Kupreanof Island altogether and made the complete shift to Admiralty in the early seventies.

Figure 49. Use of Areas on North Kupreanof Island for Deer Hunting, 1940-1985



SOUTHEAST ADMIRALTY ISLAND CASE STUDY

Admiralty Island is located about 11 miles to the northwest of Kupreanof Island. During the 1980s Kake hunters accessed Southeast Admiralty by the use of power cruisers, skiffs, and seine boats. Subunits 11 (Pybus Bay), 12 (Eliza Harbor), and 13 (Point Gardner) are included in this case study.

Historic and Contemporary Use of Southeast Admiralty Island

Pybus Bay has always been recognized by both Angoon and Kake residents as a traditional use area of the Kake Tlingit. According to clan traditions, Pybus Bay belongs to the *Katcadi* clan (Goldschmidt and Haas, 1944).

The commercial fishing industry became established in Pybus Bay with the opening of a salmon cannery in 1918 which operated during most seasons through 1928 despite periodic changes in ownership (Hassler 1973). A key respondent remembered fishing for the Pybus Bay Cannery during its last year of operation. The Kake Cannery also operated fish traps at Pybus Bay near Brothers Island prior to 1962.

According to Goldschmidt and Haas' Angoon respondents, Eliza harbor is called *G'unax* and belongs to the *Daklawedi* clan. Traditions relate that when the Angoon Tlingit left the Stikine River they first went to Eliza Harbor and established a village at Loon Point. Later they found this place unsatisfactory and moved to Angoon (Goldschmidt and Haas 1944). Kake people also recognize Eliza Harbor as Angoon territory.

In 1912 small acreages along shorelines and streams were logged in Eliza Harbor to provide lumber and pilings for nearby cannery buildings and fish traps. In 1944, 1957 and finally in 1963 through 1965 larger scale cuts were made as industrial logging companies moved into the bay. Prior to the mid 1950s the logging activity on Admiralty Island consisted of smaller private sales while in the mid 1950s several larger contract sales were negotiated. A key respondent remembered the logging camp that was at Eliza Harbor in the 1950s and another Kake resident remembered that Eddie Hamilton logged there during the 1960s.

The Point Gardner area includes Herring and Chapin bays along the southeast shore of Admiralty island, and Surprise Harbor at the extreme south tip of the island. Tyee, on Murder Cove immediately east of Surprise Harbor, is the site of a former cannery. In addition to logging that was associated with building cannery buildings, pilings and fish traps, some commercial logging took place in the Surprise Harbor and Murder Cove area in the 1920s.

Patterns of Use of Southeast Admiralty for Deer Hunting

The change in use of south Admiralty for deer hunting is represented in Figure 50. Use of Pybus Bay quadrupled from 22 percent in 1950 to 88 percent in 1980. After 1982 the percentage of active hunters using Pybus Bay dropped slightly and has continued to drop through the mid eighties.

Eliza Harbor shows a similar if not quite so dramatic increase in use from the 1950s through the early 1980s and the same slight decline in 1984 and 1985. Pt. Gardner shows a use of between 20-30 percent during the 1950s and 1960s, increasing rapidly after 1971 until it matched Pybus Bay in use by the mid-1970s.

Several factors are responsible for the steady increase in use of Admiralty Island. Pybus Bay has always been a traditional use area of the Kake Tlingit and Kake residents are familiar with the area. The purchase of larger boats during the 1950s made Admiralty Island more accessible to a larger number of Kake residents. This technological change occurred a decade before the large increase in hunting on Admiralty that began after the mid-1960s. The decline of the deer population on Kuiu and Kupreanof islands prompted hunters to shift over to Admiralty Island during the 1960s, as the productivity of Admiralty Island increased relative to Kuiu Island and Kupreanof Island.

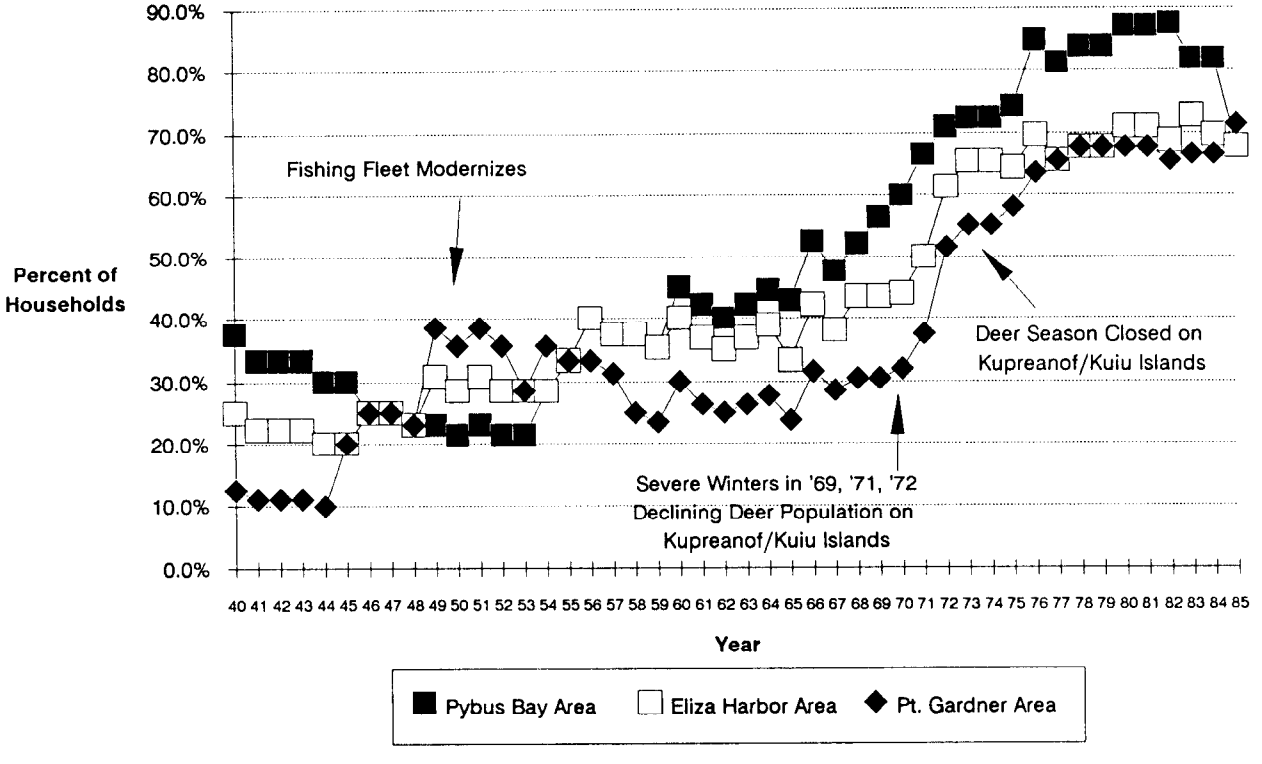
The decline in use of Admiralty Island for deer hunting that began in the early 1980s may be due to the employment of Kake residents by Kake Tribal Logging Corporation which began its timber operations in 1981. Although many employed hunters said they took leave to go hunting, others employed in the logging industry mentioned that they no longer had time to hunt. The availability of deer on Admiralty Island had remained stable or increased during those years, as did the Kake fleet of seine boats. Alternatively, the 1980s decline in hunters using Admiralty could result from the

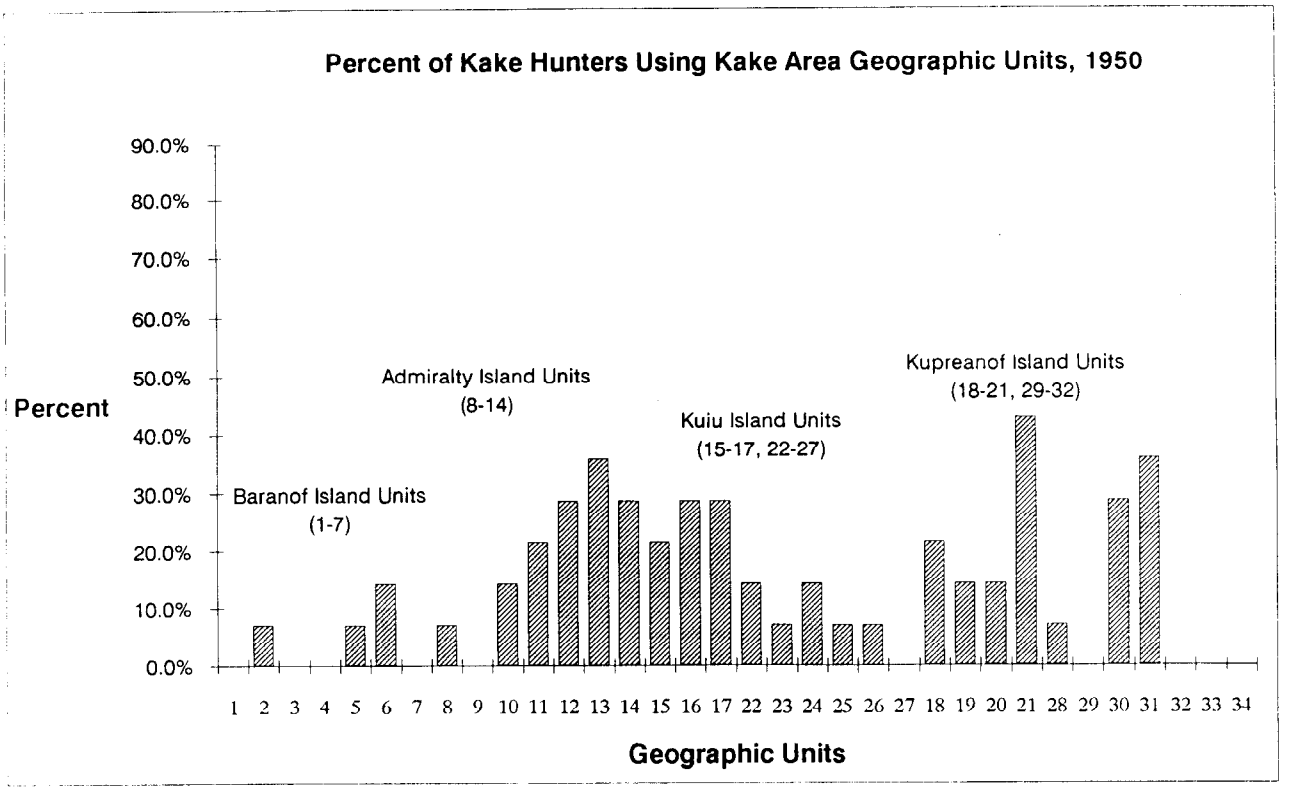
employment of new-comers to Kake (in 1895, 14% of Kake residents had lived in the community less than four years). A new household who came to Kake with the logging industry might enter into the pool of active hunters but not have access to large vessel transportation to Admiralty Island. Thus there would be a decrease in the mean percent of Kake hunters using Admiralty, though the actual number of hunters using Admiralty Island could remain the same or even increase.

Shifts in Uses Among Case Study Areas

Shifts in Kake hunting areas over three-and-a-half decades are illustrated in Figures 51 (1950, 1960), 52 (1970, 1975), and 53 (1980, 1985). These graphs further demonstrate the shifting hunting areas described above, and graphically depict the significant amount of use that, by the 1980s, was concentrated in a relatively small portion of the former hunting territory.

Figure 50. Use of Areas on Southeast Admiralty Island for Deer Hunting, by Kake Households, 1940-1985.





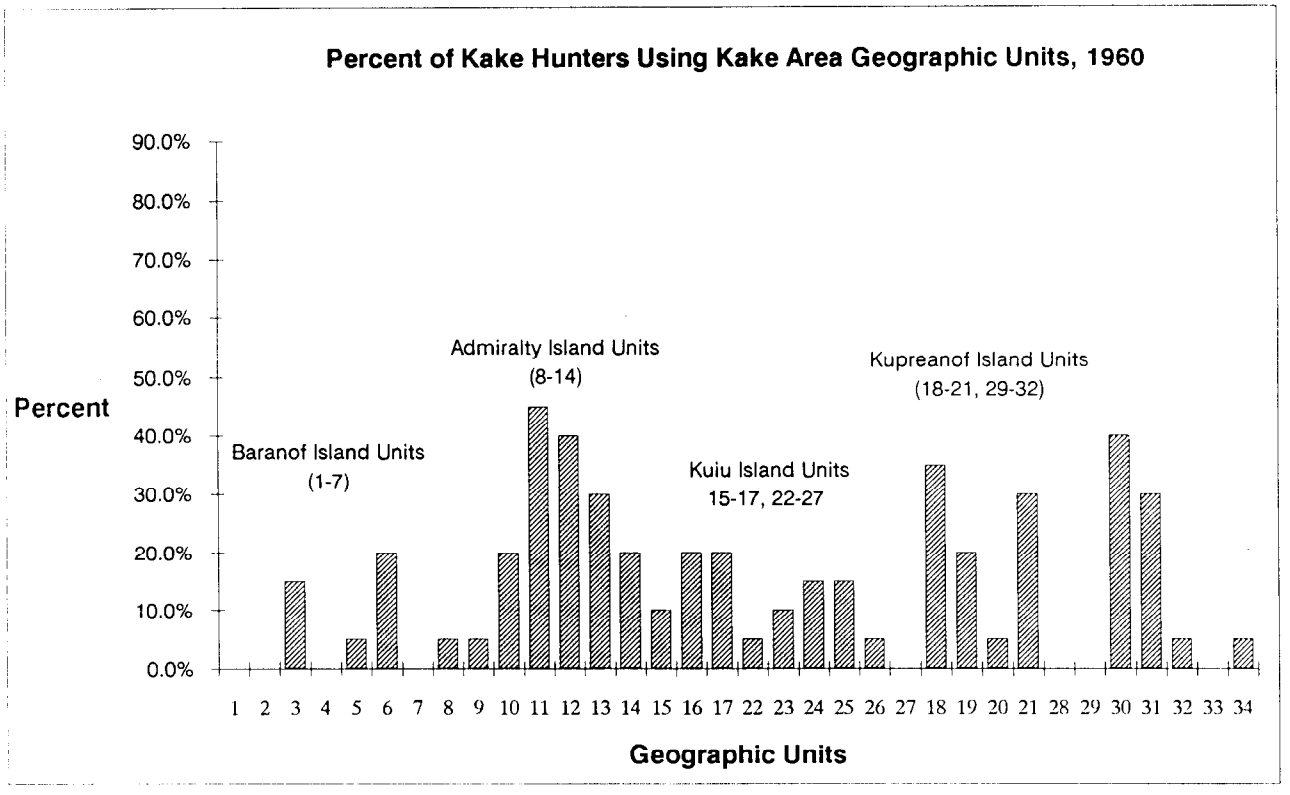


Figure 51. Percent of Kake Hunters Using Kake Area Geographic Units: 1950, 1960.

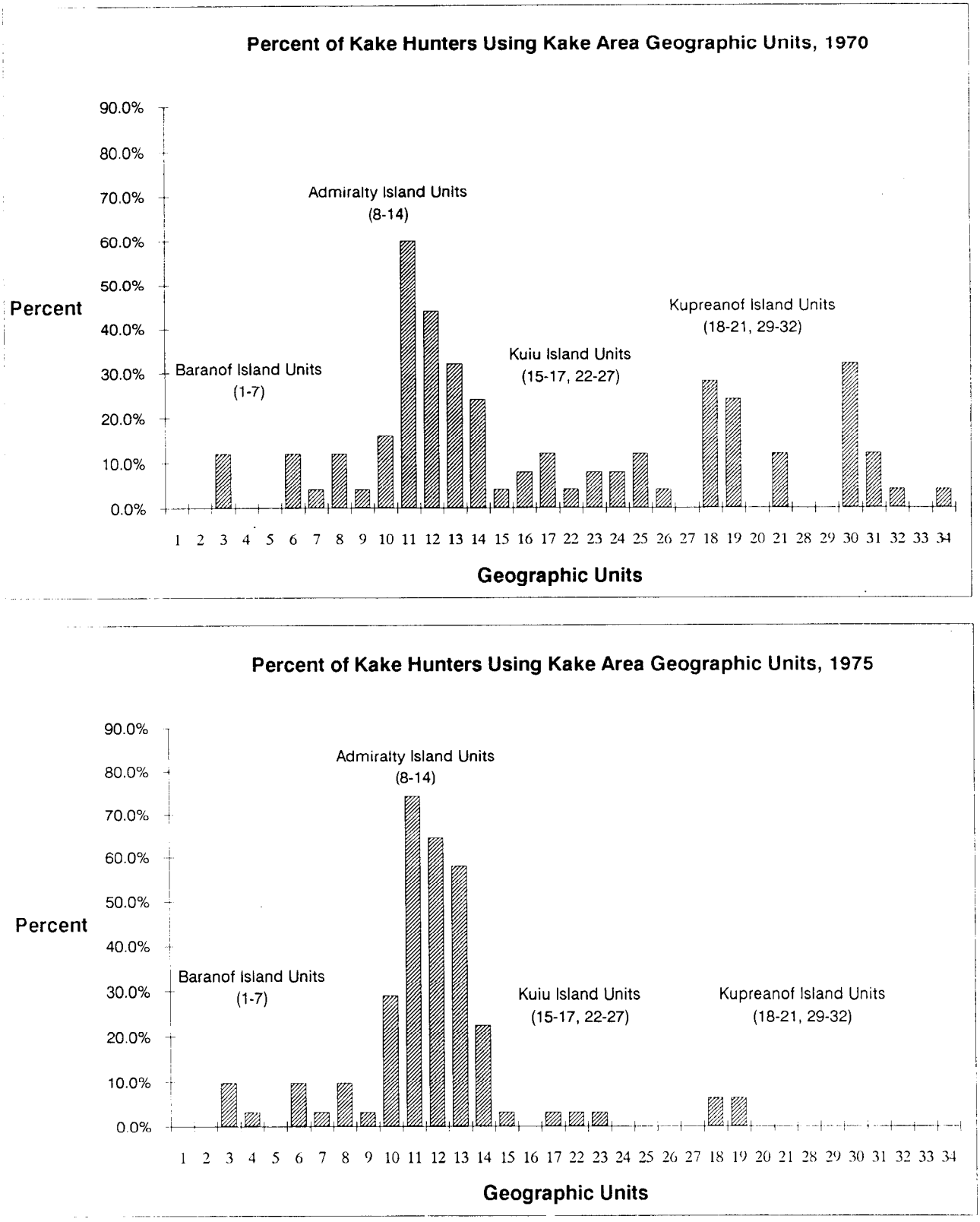
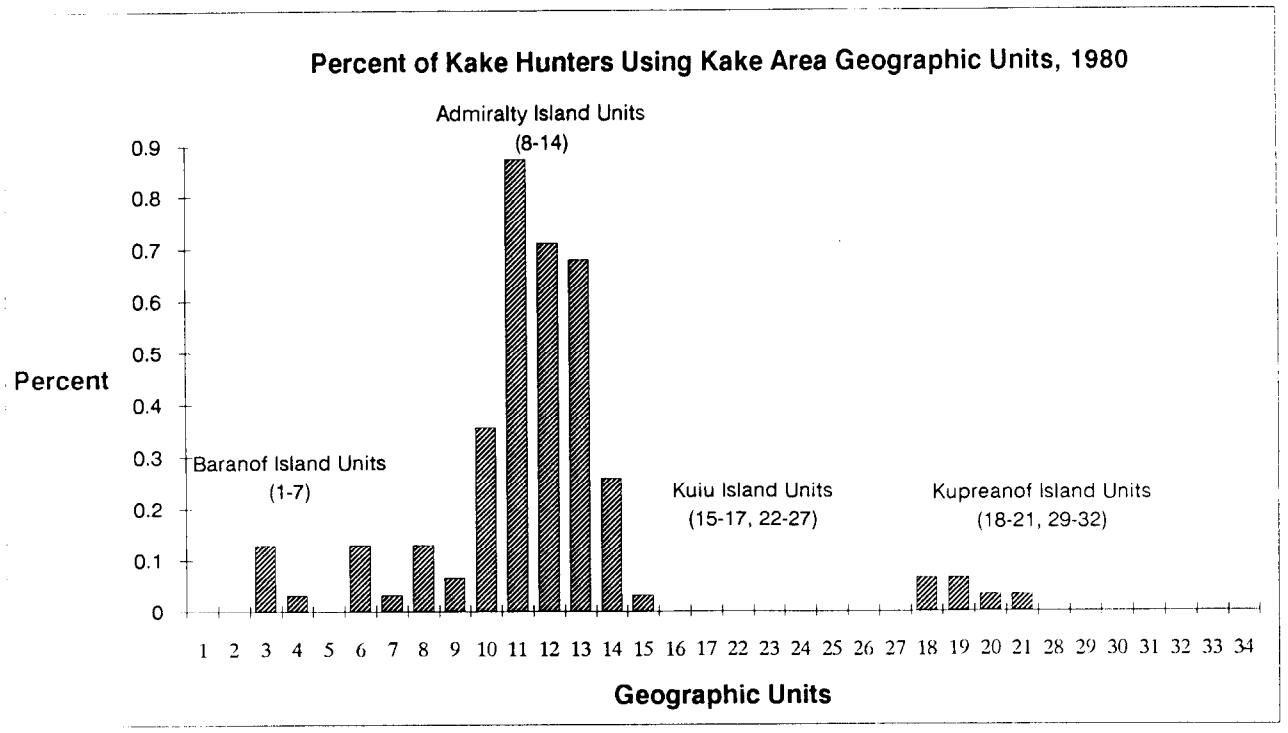


Figure 52. Percent of Kake Hunters Using Kake Area Geographic Units: 1970, 1975.



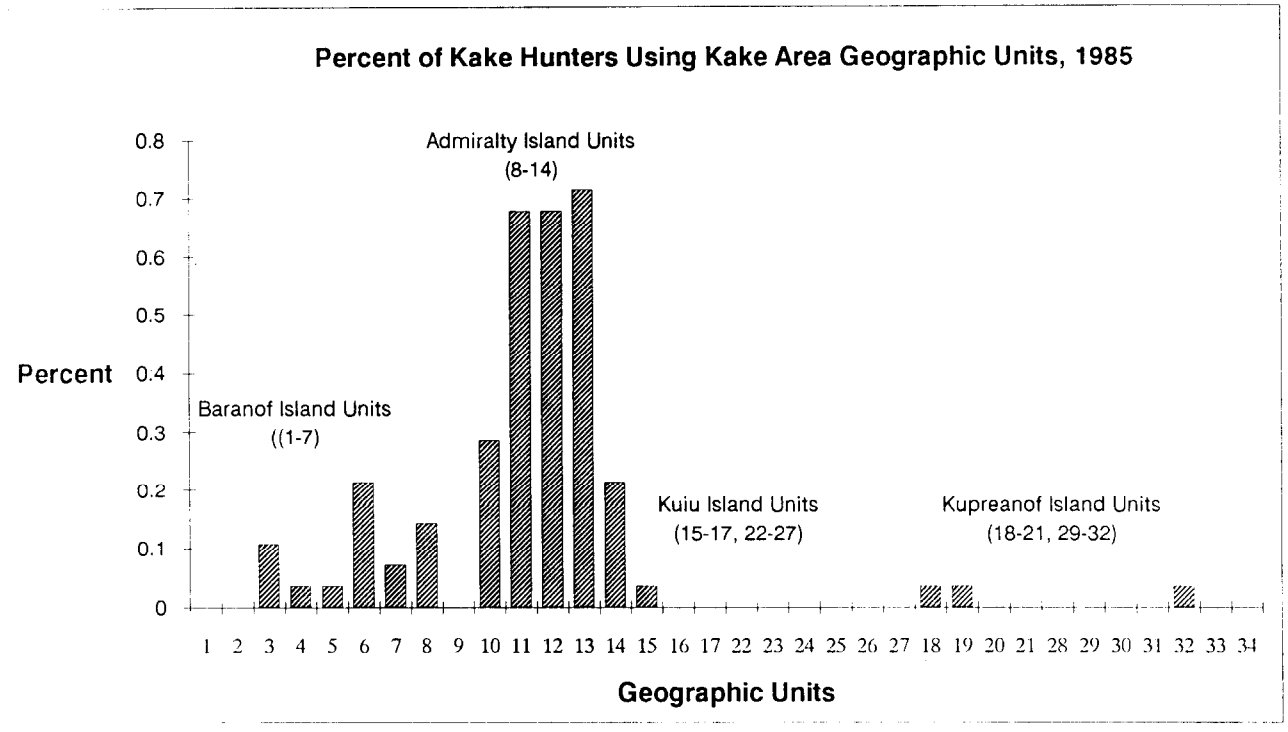


Figure 53. Percent of Kake Hunters Using Kake Area Geographic Units: 1980, 1985.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

One important purpose of this study was to understand both the cash and subsistence sectors of the Kake economy. A further goal was to understand the process of change in subsistence patterns of Kake residents, in the context of ecological, biophysical and social change occurring in the Kake area generally. This has required an assessment of the principal economic sectors operating in Kake. The project has also required a study of the history and the traditions associated with resource use by Kake residents, including fishing, hunting and gathering of wild foods. Based on this research the following conclusions about Kake land and resource use patterns have emerged.

THE KAKE POPULATION AND ECONOMY

The population of Kake has descended from a long-term, culturally homogeneous Tlingit population that consolidated at Kake from several villages on Kupreanof, Kuiu and southern Admiralty islands, and the mainland. The consolidation and other demographic characteristics of this population are associated with the development of the canned salmon industry and commercial fisheries since the turn of the century, and timber development over the past twenty years. Recent demographic changes have included immigration of non-Tlingits to the community, although at the time of the study the Kake population was still 72 percent Alaska Native. The 14 percent of the population that has resided in Kake four years or less is indicative of community economic changes that in recent years have included significant timber development on Kake Tribal village corporation lands near Kake. Local-hire policies have been established to help avert some of the economic and cultural disruption experienced by other communities, such as Klawock and Craig, that have experienced significant in-migration of non-Native timber industry workers.

Currently the Kake economy is highly dependent on employment in the government, fishing and logging sectors, an economic profile that is not unlike numerous communities in the region. In

addition to timber, Kake has participated in local fisheries development, including a cannery during the 1950s-1960s, salmon aquaculture, and a local seine fleet through years when there has been a net loss of seine permits from the region's rural communities.

HARVEST AND USE OF SUBSISTENCE FOODS

Throughout the historic period, subsistence has continued to play a major economic and cultural role in the community. At present, subsistence hunting, fishing and gathering are major contributors to Kake's economy. Survey results and interviews document continuous use of subsistence food resources throughout the lifetimes and memories of Kake residents, and a continuance of traditional means of food production, preparation, and exchange. Virtually all wild foods traditionally used in the community were used during the study year. These included deer, seal, black bear, furbearers, waterfowl, upland birds, marine invertebrates (including clams, gumboot chitons, sea cucumber and crab), salmon, trout, char, halibut, cod, rockfish, herring, herring eggs, seaweed, berries and other plants.

Quantities of subsistence foods harvested by Kake residents were relatively high compared with U.S. dietary standards. In Kake, during the year of the study, households harvested 217 lbs. per capita of locally available wild foods. This harvest approximates the subsistence harvests of other similar Southeast Alaska communities studied by the Division of Subsistence, including Angoon at 215 lbs. per capita in 1985 (George and Bosworth 1988) and Klawock at 202 lbs. per capita in 1985 (Ellanna and Sherrod 1987).

Among the subsistence foods harvested by Kake residents in 1985, salmon and halibut were taken in the greatest quantities per household, followed by deer, seal, marine plants, and shellfish. Nearly 85 percent of the fish and shellfish used by Kake households were taken locally as a subsistence harvest. Among the salmon harvested, 28 percent were taken for home use from commercial catches. Primary among these were king and coho, for which subsistence net fisheries were not allowed by regulation. Of those taken using non-commercial gear, including nets and troll gear, most were chum

and pink salmon. Significant numbers of sockeye, coho and king salmon were harvested for home use. All foods were shared within and outside Kake, with halibut, salmon and deer being shared among the greatest number of households.

In spite of the importance of salmon and the continued effort to harvest salmon efficiently, use of this particular resource is nonetheless relatively low in Kake compared to other areas of Alaska and some parts of Southeast. This in part is due to low returns at terminal streams and resultant restrictive salmon harvest regulations: low permit allowances, subsistence harvest of certain species being forbidden (ie: king and coho salmon), and other restrictive measures.

HUNTING AND FISHING AREAS

Traditional and Contemporary Use Areas

Traditional use areas of the Kake people included much of west Kupreanof and Kuiu islands as well as portions of Baranof Island, Admiralty Island and the mainland. This territory historically provided Kake people with access to virtually all marine and terrestrial food resources of the region. With the exception of some mainland areas all of this territory is used today by Kake residents for subsistence hunting, fishing and gathering activities. Some deer hunting and salmon fishing also takes place in areas that are beyond the traditional Kake territory boundaries.

Changing Patterns of Deer Hunting

The intensity of use of subsistence harvest areas has changed through time, depending on variables such as employment, commercial fishing patterns, weather, and resource abundance. Changes in use of deer hunting areas were examined in this study to demonstrate these historic shifts. Several such shifts in land area used for hunting were documented, and the reasons for those shifts are fairly certain. This study has shown the following:

1) During the last decade, traditional hunting areas on Admiralty Island have increasingly provided Kake with deer at a time when deer populations were declining locally. This is a function that these, or other areas similarly remote from Kake, may have served in the past. Such flexibility is inherent in successful subsistence strategies, and points to the importance of subsistence harvest territories that may not be fully utilized in any one year or series of years.

The major shift in hunting area over the past forty years has been from Kuiu and Kupreanof Islands to Southern Admiralty Island. The primary cause for this shift is environmental--the failure of deer populations in areas proximate to Kake.

2) The decline in the deer population is multifactoral, probably due to a series of severe winters and the pressures of wolf and human predation.

3) If shifting use of deer hunting areas by Kake hunters is taken as an indicator of the relative timing of deer population declines, the deer declined first on Kuiu Island, then on Kupreanof Island. The three severe winters that occurred from 1968-69 to 1971-72 finished off a longer term decline that had occurred at least over the previous decade and probably longer.

4) The deer populations and thus deer hunting success on Southern Admiralty Island became increasingly better relative to Kuiu and Kupreanof islands, and hunting effort shifted steadily to Admiralty over a 30-year period. These changes were not sudden, but represent steady, building trends in use, as increasing numbers of hunters changed over each year to a new area.

5) Larger fishing boats came to be used by some Kake fishermen as the fleet modernized in the 1950s. These larger boats, including seine boats, provided greater access to Southern Admiralty Island for deer hunting. However, the existence of large boats and their use by hunters did not cause the shift. It was the declining local deer populations relative to those of other areas that caused it.

6) Commercial fishing areas are associated with deer hunting areas on Baranof Island. The decline in commercial importance of south Baranof Island led to a shift in hunting area northward to Gut Bay, closer to Kake.

7) That local employment in the logging industry might have an effect on deer hunting effort is raised in this study as an interesting, though somewhat speculative, possibility. While employment patterns can dramatically affect time available for hunting and fishing, household food harvest strategies also may be flexible enough to accomodate seasonal jobs. The relationship between employment and subsistence food production at Kake is worthy of further study.

8) Effects of timber development on hunting patterns at Kake are different from those found in previous studies at Klawock and Tenakee Springs (Ellanna and Sherrod 1987, Leghorn and Kookesh 1987). The logging road network in the vicinity of Kake has not created changes in deer hunting patterns. People at Kake have not shifted to road hunting as a deer harvest strategy. And outsiders have not travelled to the Kake road network to hunt deer, as competitors to local hunters. This is because the local deer populations failed before significant timber and road development had occurred. The road network would probably have been used locally for some deer hunting, even with reduced deer availability, except that deer hunting near Kake was closed in 1973.

9) The longer term ecological effects of logging on deer hunting on Kuiu and Kupreanof islands appear to be problematic. The Kupreanof and Kuiu Island deer populations are currently depressed, and continued loss of critical winter habitat resulting from ongoing logging in these areas is not conducive to deer recovery. Additionally, after the first decade or so, patterns of succession and regrowth of clearcuts are not advantageous to deer populations or deer hunting. Thus, while logging did not cause the depletion of deer on traditional hunting areas on Kuiu and Kupreanof islands, recent and future logging in these areas will probably be a factor inhibiting the recovery of deer.

10) The Kake study illustrates how a traditional Tlingit population makes food production choices in the face of declining subsistence resources. The areas that Kake hunters shifted to were within the Kake Tlingit's traditional clan area, or within adjacent areas where there have been kinship linkages with Angoon. However, these choices have also to do with the costs associated with hunting activity. Lands to the south are largely inaccessible or expensive to use because of the difficulty of travelling around Kuiu Island or through Rocky Pass. Lands to the east are largely devoid of deer, or were in Petersburg's hunting area. And lands along the west coast of Admiralty Island and the east coast of Baranof Island are distant, more expensive to travel to, require potentially dangerous water crossings, and are within Angoon's hunting area. Kake hunters have by and large changed their hunting effort within the boundaries of the tribe's clan areas, not shifted to areas outside the clan area boundaries.

11) The Kake community's increasing use of Admiralty Island for deer hunting is likely a harbinger of future trends, for other communities. In the event of depleted deer populations elsewhere, it may very likely be the case that the protected-land status of Admiralty Island National Monument, and the likelihood of continued abundant and pristine deer habitat there, will result in additional directed hunting pressure. There are signs of this in the use patterns that have developed by both Kake and Petersburg hunters.

The changes in hunting patterns described and discussed here raise important land and resource management issues. First is the increasing importance of Admiralty Island in the subregion of which Kake is a part. Second is the relationship between employment (especially commercial fishing) and subsistence production. Third is the likelihood of deer population recovery on Kuiu and Kupreanof Islands in the context of predation and habitat loss due to logging. These issues exist within and are inseperable from the changing social, cultural and environmental context of the community of Kake. Study and evaluation of the inevitable growth, development and change in Kake, and other similar communities in the region, will continue to be a necessary component of responsible and

culturally-sensitive land and resource management. It is the hope of the authors that this report serves as a useful aid to such efforts, and a baseline for future work.

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APPENDIX A: SURVEY INSTRUMENT

Timber Management and Subsistence Fish and Wildlife Utilization
General Household Survey

Community _____
Household Id # ____
Interviewer _____
Date _____

*All questions concerning harvest and use of fish, game, and other natural resources refer to the previous 12 month period, from about May 1, 1985, to Apr. 30, 1986.

1. Persons in Household:

ID#	Gender	Birth Year	Place of Birth (residence)	# Years in Community	Tribe (Eagle/Raven)	Clan/Ethnicity or non-Native	Education (adults, in years)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

1b. Indicate which household members participated in hunting or fishing for subsistence (home) use in the past year (use ID# from above)

Hunting_____ Fishing_____

2. Equipment used for hunting, fishing or gathering:

Type of Equipment	Use for Houshold Hunting, Fishing, and Gathering (check)
Automobile or truck	_____
Skiff	_____
Purse seiner	_____
Troller	_____
Cabin cruiser	_____
ATV	_____
Snowmachine	_____
Airplane	_____
Freezer	_____
Smokehouse	_____
Beach seine	_____

3. Employment of household members (cash employment): (May 1985 - April 1986)
(job to be coded by researcher)

Person Id.	Job titles	Number of months Worked last year	Number of hours worked per week when working

4. Do any members of your household hold commercial fishing permits? yes no

4b. How many permits of each type are in the household?

Purse seine	____
Power troll	____
Hand troll	____
Gill net	____
Crab	____
Halibut	____
Black cod	____
Bottom fishing	____
Herring	____

5. Did you or a household member commercial fish in the last 12 months? yes no

In type of fishery? (indicate # from household who fished in last year)

Purse seine ____
Power troll ____
Hand troll ____
Gill net ____
Crab ____
Halibut ____
Black cod ____
Bottom fishing ____
Herring ____

6. Non-commercial use of commercial catch:
(If answer to question 5 is no, go to question 7.)

Species	Comm. Fish?	Number removed from commercial catch: Seine	P-troll	H-troll	Gill net	# used at home	# gave away	
King								
Chum								
Pink								
Sockeye								
Coho								

Species	Number/amount removed from commercial catch	# used at home	# gave away
Halibut	_____# _____		
Crab	_____# _____		
Shrimp	_____lbs. _____		

7. Non-commercial salmon harvest and use (in numbers of fish):

Species	Total Harvest	Harvest gear type: P-seine	B-seine	rod/reel	gillnet	gaff/spear	Number Given to Others (from non-comm)	Number Received from others (from all sources)	Total Use (inc. all fish used)
King									
Chum									
Pink									
Sockeye									
Coho									

8. Non-commercial harvest and use of freshwater fish (in numbers of fish);

Species	Attempt (yes/no)	Total Harvest	Total Use
Cutthroat			
Dolly Varden			
Rainbow trout			
Steelhead			

9. Non-commercial harvest and use of marine fish (in numbers of fish);

Species	Attempt (yes/no)	Total Harvest	Total Use	
Candle fish (capelin)	xxxxxxxxx			lbs.
Hooligan (eulachon)				lbs.
Pacific herring				lbs.
Herring eggs, on kelp (on branches)				lbs.
Eels	xxxxxxxxx			lbs.
Flounder, sole	xxxxxxxxx			#
Halibut #				xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Halibut lbs.				lbs.
Sablefish (black cod)	xxxxxxxxx			lbs.
Cod	xxxxxxxxx			lbs.
Red snapper	xxxxxxxxx			#
Other rockfish	xxxxxxxxx			lbs.
Shark	xxxxxxxxx			lbs.
Sculpin, Irish lord, bullhead	xxxxxxxxx			#
Other marine fish (lbs.)	xxxxxxxxx			lbs.

Gave to others (from non-com.) Received from others (from all sources)

10. Non-commercial harvest and use of marine invertebrates:

Species	Attempt (yes/no)	Total Harvest	Total Use	
Cockles	xxxxxxxxx			(in 5 gal. buckets)
Clams	xxxxxxxxx			(in 5 gal. buckets)
Geoduck, mussels, other	xxxxxxxxx			(in 5 gal. buckets)
Dungeness crab				(in numbers of crab)
King crab				(in numbers of crab)
Tanner crab				(in numbers of crab)
Other crab, (lbs.)	xxxxxxxxx			(in numbers of crab)
Abalone				(in 5 gal. buckets)
Black and red gumboot	xxxxxxxxx			(in 5 gal. buckets)
Neets (sea urchin)	xxxxxxxxx			(in 5 gal. buckets)
Rock oyster (rock scallop)	xxxxxxxxx			(in 5 gal. buckets)
Octopus (devil fish)	xxxxxxxxx			(in 5 gal. buckets)
Sea cucumber (yen)	xxxxxxxxx			(in 5 gal. buckets)
Shrimp				(in pounds)
Other	xxxxxxxxx			(in pounds)

11. Harvest and use of marine plants (in 5 gal. buckets):

Species	Total Harvest	Total Use
Black seaweed		
Red seaweed (sea ribbons)		
Bull kelp		
Other seaweed		

12. Harvest and use of deer:

12a. Did any household member hunt deer in the last year? yes no

12b. How many days were spent hunting deer in the last year by each hunter?
(refer to question 1b for hunter number)

Hunter #___,_____days.
Hunter #___,_____days.
Hunter #___,_____days.
Hunter #___,_____days.
Hunter #___,_____days.

12c. How many deer were taken by your household during the last year, the 1985 season?_____

12d. Indicate access used, hunting, and harvest areas (enter number of deer taken, 0 = tried with no success, blank = did not try):

	Habitat Type								
	Beach	Muskeg	Alpine	Forest	Road	Clearcut 0-12	Clearcut 13-30	Clearcut 31-200	
# Deer									
Access									

12e. Did you receive any deer from another household? yes no How many?____

12f. Did you give any deer to other housholds? yes no How many?_____

12g. Did you use or give deer for a potlatch, party, or other traditional celebration? yes no How many?____

List number of parties by type:
12g.1._____
12g.2._____
12g.3._____
12g.4._____
12g.5._____

12h. How many deer were taken by your household during the 1984 season?_____

12i. How many deer were taken by your household during the 1983 season?_____

13. Harvest and use of other land mammals (in numbers):

Species	Harvest Attempt (yes/no)	Total Harvest	Of Harvest Use for Food	Of Harvest Use for Fur/Craft	Total Use for Food (inc. received from others)
Black bear					
Brown bear					
Mountain goat					
Moose					
Hare	xxxxxxxxxxxxx				
Marmot	xxxxxxxxxxxxx				
Porcupine	xxxxxxxxxxxxx				
Squirrel	xxxxxxxxxxxxx				
Other	xxxxxxxxxxxxx				
Beaver	xxxxxxxxxxxxx				
Coyote	xxxxxxxxxxxxx				
Red fox	xxxxxxxxxxxxx				
Lynx	xxxxxxxxxxxxx				
Land otter	xxxxxxxxxxxxx				
Marten	xxxxxxxxxxxxx				
Mink	xxxxxxxxxxxxx				
Muskrat	xxxxxxxxxxxxx				
Weasel	xxxxxxxxxxxxx				
Wolf	xxxxxxxxxxxxx				
Wolverine	xxxxxxxxxxxxx				
Other furbearer	xxxxxxxxxxxxx				

14. Harvest and use of marine mammals (in numbers):

Species	Harvest Attempt (yes/no)	Total Harvest	Of Harvest Use for Food	Of Harvest Use for Fur/Craft	Total Use for Food (inc. received from others)
Harbor seal					
Porpoise, harbor and Dall					
Sealion					
Sea otter					

15. Non-commercial harvest and use of birds and bird eggs:

Species	Harvest Attempt (yes/no)	Total Harvest	Total Use
Grouse, spruce	xxxxxxxxx		
Ptarmigan	xxxxxxxxx		
Black brant			
Canada goose			
Emperor goose			
Snow goose			
White fronted goose			
Swan	xxxxxxxxx		
Sandhill crane	xxxxxxxxx		
Ducks			
Sea birds, sea ducks			
Seagull, tern eggs	xxxxxxxxx		

16. Harvest and use of plants and berries:

16a. How many quarts of berries did you harvest in the past year?_____

16b. How many quarts of berries did you use in the past year?_____

16c. Which of the following species of berries did you harvest? (in quarts)

Species	
Highbush blueberries	
Lowbush blueberries	
Cranberries	
Red huckleberries	
Black huckleberries	
Nagoonberries	
Salmonberries	
Soapberries	
Grey currants	
Goose berries	
Jacob berries	
Elder berry	
Raspberry	
Strawberry	
Thimble berry	

16d. How many quarts of food plants did you harvest in the past year?_____

16e. How many quarts of food plants did you use in the past year?_____

16f. Which of the following species of food plants did you harvest? (in quarts)

Beach asparagus _____
Wild celery _____
Devil's club _____
Wild Parsley _____
Sourdock _____
Goose tongue _____
Fiddlehead ferns _____
Indian rice _____
Wild sweet potatoe _____
Hudson bay tea _____
Hemlock bark _____
Mint _____

17. Firewood, houselogs.

17a. Harvest and use of wood (not purchased):

Firewood _____cords.
Houselogs_____board feet

17b. Number of cords of wood purchased _____.

17c. Number of cords of wood sold_____.

18. Household gross income from all sources (after deducting commercial fishing or other business expenses):

_____

19. Approximately what percent of your total household income in 1985 came from each of the following categories (should total 100%):

Commercial fishing_____
Logging_____
Longshoring_____
Government service_____
Retail business_____
Construction_____
Transfer payments_____
Investments, retirement income_____
Other_____

20. Between May 1, 1985, and April 30, 1986, what proportion of the meat, fish, intertidal resources, fowl, and eggs that your family uses come from hunting, fishing, and gathering?
(include resources received from comm. catches without payment)

Meat_____%
Fish_____%
Intertidal resources_____%
Fowl_____%
Eggs_____%

21. How much of the following traditional foods did your family use in the past year?

25a. Seal oil_____qts.
25b. Hooligan oil_____qts
25c. Deer fat_____lbs
25d. Fermented fish heads _____#
25e. Dried salmon_____lbs
25f. Dried halibut_____lbs
25g. Smoked deer_____lbs
25h. Fish eggs, caviar_____qts
25i. Sealion flippers _____#

22. If fish and game regulations allowed, what would be the right amount of each of the following species for your household for one year?

Deer #_____
Halibut _____lbs.
King salmon #_____
Sockeye #_____
Coho salmon #_____
Chum salmon #_____
Pink salmon #_____
Crab #_____
Harbor seals #_____
Steelhead #_____

23. What is the overall importance of subsistence to you and your family?

LIST ALL AREAS WHICH HAVE BEEN USED FOR ANY HUNTING, FISHING OR GATHERING DURING THE LIFE TIME OF THE THE RESPONDENT

Sub-Area	Area Used YES	Area Used NO	Sub-Area	Area Used YES	Area Used NO
1. West Side Baranof			18. Keku Strait		
2. Port Alexander			19. Hamilton Bay		
3. Gut Bay			20. Big John Bay		
4. Red Bluff Bay			21. Rocky Pass		
5. Warm Spring Bay			22. Port Camden		
6. Kelp Bay			23. Kadake Bay		
7. Peril Strait			24. Pillar Bay		
8. Angoon			25. Tebenkof		
9. Seymour Canal			26. No Name Bay		
10. Gambier Bay			27. Affeck Canal		
11. Pybus Bay			28. Prince of Wales		
12. Eliza Harbor			29. South Kupreanof		
13. Pt. Gardner			30. Roaded Area		
14. Whitewater Bay			31. Pinta Point		
15. Rowen Bay			32. Petersburg		
16. Security Bay			33. Wrangell		
17. Saginaw Bay			34. Port Houghton		
			35. Sumdum		

KAKE SUPPLEMENT [Show respondent subunit map and ask questions]

1. When did you first start hunting deer in the Kake area?
2. What areas did you use?
3. How did you access these areas?
4. Continue by recording areas used and access through their lifetime up to present?
5. Note any changes in use areas, access and years and when deer were no longer hunted an reasons.
6. For 1983-85 indicate areas hunted that were also successful with and X.

	AREA	20	30	40	50	60	70	80	83	84	85	REASON FOR NO LONGER USING
1	West side Baranof	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
2	Port Alexander	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
3	Gut Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
4	Red Bluff Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
5	Warm Spri Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
6	Kelp Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
7	Peril Strait	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
8	Angoon	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
9	Seymour Canal	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
10	Gambier Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
11	Pybus Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
12	Eliza Harbor	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
13	Pt. Gardner	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
14	Whitewater Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				

KAKE SUPPLEMENT cont. [Show respondent subunit map and ask questions]

1. When did you first start hunting deer in the Kake area?
2. What areas did you use?
3. How did you access these areas?
4. Continue by recording areas used and access through their lifetime up to present?
5. Note any changes in use areas, access and years and when deer were no longer hunted an reasons.
6. For 1983-85 indicate areas hunted that were also successful with and X.

	AREA	20	30	40	50	60	70	80	83	84	85	REASON FOR NO LONGER USING
15	Rowan Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
16	Security Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
17	Saginaw Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
18	Keku Strait	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
19	Hamilton Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
20	Big John Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
21	Rocky Pass	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
22	Port Camden	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
23	Kadake Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
24	Pillar Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
25	Tebenkof	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
26	No Name Bay	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
27	Affleck Canal	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
28	Prince of Wales	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				

KAKE SUPPLEMENT cont. [Show respondent subunit map and ask questions]

1. When did you first start hunting deer in the Kake area?
2. What areas did you use?
3. How did you access these areas?
4. Continue by recording areas used and access through their lifetime up to present?
5. Note any changes in use areas, access and years and when deer were no longer hunted an reasons.
6. For 1983-85 indicate areas hunted that were also successful with and X.

	AREA	20	30	40	50	60	70	80	83	84	85	REASON FOR NO LONGER USING
29	South Kupreanof	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
30	Roaded Area	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
31	Pinta Point	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
32	Petersburg	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
33	Wrangell	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
34	Port Houghton	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
35	Sumdum	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				
		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	.				

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24. Give to other households matrix (enter number of households in each place that received X from you):

	Hoonah	Angoon	Petersburg	Wrangell	Juneau	Sitka	Other AK.	Other non-AK
Salmon								
Halibut								
Seals								
Deer								
Clams, Cockles,								
Herring Eggs								
Berries/plants								

25. Receive from other households matrix (enter number of households in each place that gave X to you):

	Hoonah	Angoon	Petersburg	Wrangell	Juneau	Sitka	Other AK.	Other non-AK
Salmon								
Halibut								
Seals								
Deer								
Clams, Cockles,								
Herring Eggs								
Berries/plants								

26. Traditionally where did you or members of your family maintain camps or smoke houses? (refer to numbered areas on the map or record specific location name)

_____.

27. a. During your lifetime in Kake what has caused changes in your subsistence activities (hunting, fishing gathering or preparing of wildfoods)?

b. During your lifetime in Kake has timber harvesting caused changes in your subsistence activities?

28. Is there anything that has not been covered that should be discussed?

APPENDIX B

CONVERSION FACTORS FOR DETERMINING USABLE
WEIGHTS OF RESOURCES USED IN KAKE DURING 1986

Common Name	(Local Name if Different from Common Name)	Scientific Name	Usable Weight	Source
SALMON				
Chinook	(King)	Oncorhynchus tshawytscha	14.6 lbs.	ADF&G Comm. Fish. Div.
Chum	(Dog)	Oncorhynchus keta	6.8 lbs.	ADF&G Comm. Fish. Div.
Pink	(Humpback)	Oncorhynchus gorbuscha	2.7 lbs.	ADF&G Comm. Fish. Div.
Red	(Sockeye)	Oncorhynchus nerka	5.5 lbs.	ADF&G Comm. Fish. Div.
Silver	(Coho)	Oncorhynchus kisutch	6.7 lbs.	ADF&G Comm. Fish. Div.
OTHER FISH				
Cutthroat Trout		Salmo clarki	1.5 lbs.	Researcher Estimate
Dolly Varden		Salvelinus malma	1.4 lbs.	Researcher Estimate
Rainbow Trout		Salmo gairdneri	2.0 lbs.	Researcher Estimate
Steelhead		Salmo gairdneri	6.0 lbs.	Researcher Estimate
Capelin	(Candle fish)	Mallotus villosus	20 lbs. per 5 gal. bucket	Researcher Estimate
Eulachon	(Hooligan)	Thagichthys pacificus	Recorded in lbs.	-
Pacific Herring		Clupea pallasii	Recorded in lbs.	-
Herring Eggs on Kelp/Other Substrate		-	Recorded in lbs.	-
White Sturgeon		Acipenser transmontanus	40 lbs.	Reseacher Estimate
Unknown Eel		-	8 lbs.	Reseacher Estimate
Starry Flounder		Palatichthys stellatus	4.0 lbs.	Morrow 1980
Sole		Pleuronectidae	2.0 lbs.	Researcher Estimate
Halibut		Hippoglossus stenolepis	Recorded in lbs.	-
Ling Cod	(Greenling)	Ophiodon elongatus	5.0 lbs.	Researcher Estimate
Pacific Cod		Gadus macrocephalus	4.0 lbs.	Researcher Estimate
Tom Cod		Family Gadidae	2.0 lbs.	Researcher Estimate
Sablefish	(Blackcod)	Anoplopoma fimbria	6.0 lbs.	Researcher Estimate
Unknown Cod		Family Gadidae	2.0	Researcher Estimate
Blue Rockfish		Sebastes mystinus	2.0	Researcher Estimate

APPENDIX B (continued)

CONVERSION FACTORS FOR DETERMINING USABLE
WEIGHTS OF RESOURCES USED IN KAKE DURING 1986

Common Name	(Local Name if Different from Common Name)	Scientific Name	Usable Weight	Source
Red Snapper		Sebastodes rub errimus	3.0 lbs.	Researcher Estimate
Sea Bass		Cynoscion nobilis	2.0 lbs.	Researcher Estimate
Sea Perch		-	2.0 lbs.	Researcher Estimate
Unknown Rockfish		-	2.0 lbs.	Researcher Estimate
Skates		-	5.0 lbs.	Researcher Estimate
Dogfish	(Spiny)	Squalus acanthias	4.0 lbs.	Researcher Estimate[3]
Buffalo Sculpin		Enophrys bison	1.0 lbs.	Technical Paper #95[3]
Irish Lords	(Uglies)	Hemilepidotus hemilepidotus	1.0 lbs.	Technical Paper #95[3]
Basket Cockles		-	2.0 lbs. (per 5 gal. bucket)	Technical Paper #95[3]
Butter Clams		Saxidomus giganteus	2.0 lbs. (per 5 gal. bucket)	Technical Paper #95[3]
Razor Clams		Siliqua patula	2.0 lbs. (per 5 gal. bucket)	Technical Paper #95
Dungeness Crab		Cancer magister	2.5 lbs	Koeneman, ADF&G, per. comm.
King Crab		Paralithodes camtschatica	7.0 lbs.	Koeneman, ADF&G, per. comm.
Tanner Crab		Chionoecetes bairdi	2.2 lbs.	Koeneman, ADF&G, per. comm.
Abalone		Haliotis kamtschatkana	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Black Gumboots		-	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Sea Urchin	(Neets)	-	5.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Octopus	(Devil Fish)	-	10.0 lbs.	K.A.N.A. (1983)[2]
Sea Scallops		Patinopecten cauirnus	Recorded in lbs.	-
Shrimp		Panadalid	Recorded in lbs.	-
Black Seaweed		-	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Sea Ribbons		-	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Bull Kelp		-	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Sea Cucumber		-	2.0 lbs (per 5 gal. bucket)	ADF&G[1]
MARINE MAMMALS				
Harbor Seal		Phoca vitulina	180.0 lbs	ADF&G[1]

1 Wildlife Notebook Series
2 Kodiak Area Native Association
3 ADF&G Subsistence Division

APPENDIX B (continued)

CONVERSION FACTORS FOR DETERMINING USABLE
WEIGHTS OF RESOURCES USED IN KAKE DURING 1986

Common Name	(Local Name if Different from Common Name)	Scientific Name	Usable Weight	Source
LAND MAMMALS				
Deer		Odocoileus hemionus sitkensis	80.0 lbs.	L. Johnson, ADF&G, pers. comm.
Moose		Alces alces	550.0 lbs	Researcher Estimate
Black Bear		Ursus americanus	150.0 lbs	Researcher Estimate
Brown Bear		Ursus arctos	50.0 lbs	Researcher Estimate
Mountain Goat		Oreamnos americanus	120.0 lbs	ADF&G[1]
Lynx		Lynx canadensis	20.0 lbs	Researcher Estimate[2]
Beaver		Castor canadensis	15.0 lbs	Technical Paper #95[2]
Hare		Lepus americanus	1.5 lbs	Technical Paper #95[2]
BIRDS AND EGGS				
Ptarmigan		Lagopus lagopus	.7 lbs.	Technical Paper #95[2]
Canada Geese		Branta canadensis	5.0 lbs.	Technical Paper #95[2]
Whistling Swan		Olor columbianus	8.0 lbs.	Technical Paper #95[2]
Sandhill Crane		Grus canadensis	8.0 lbs.	Technical Paper #95[2]
Ducks		-	1.5 lbs.	Technical Paper #95[2]
Seabird Eggs (Pigeon eggs)		-	.20 lbs.	Researcher Estimate
PLANTS AND BERRIES				
Berries		-	1.0 lb. per quart	Researcher Estimate
Plants		-	1.0 lb. per quart	Researcher Estimate

[1] Wildlife Notebook Series
[2] ADF&G Subsistence Division

APPENDIX C

Key Respondent Questions

1. RESOURCE USE AREA. "Draw a line around all the areas you have used for [hunting deer] in your lifetime, since living at Kake."

Resource categories for this question include at least,

a. hunting deer
b. fishing salmon
c. gathering intertidal/marine invertebrates & marine plants
d. hunting birds
e. trapping
f. seal
g. crab

This first question provides a line which depicts the area used for particular resource harvest during the lifetime of the informant.

2. AREA IDENTIFICATION. "Can you show me areas where you used to [hunt deer], but no longer [hunt deer]?"

The respondent should draw a line around these areas, creating a subset of the area drawn in the first question. The following question series pertains to this discrete area.

3. NAME. "What is the name of the area?"

4. CHRONOLOGY OF USE.

4.1 "When did you first use the area?"
4.2 "How long did you use the area?"
4.3 "When did you stop using the area?"

If a person provides a major event (like post-military service) marking the time period, these major events should be converted into years.

5. RESOURCE TRENDS. "What has happened to [deer] in that area over time?"

Trends should be recorded as general increases or decreases in resource abundance or availability over time.

6. MEANS AND METHODS. "How did you [hunt]?"

Mode of access should be recorded. Also, general harvesting methods and strategies should be recorded, such as whether the hunt took place in conjunction with commercial fishing or other multipurpose trips.

6. REASONS FOR CHANGE IN USE.

7.1 "Why did you stop using the area?"
7.2 "What changes have occurred in the area that affected your use of the area?"

8. "According to USFS records, this area [point to the map] was logged starting about [date, e.g., 1943]. If you remember this logging operation, can you tell me some things about it, such as:

a. How many years did the logging operation take?
b. How many workers were present?
c. Were there staging areas and camps?
d. Was the area entered several times, "such as for thinning?"

9. "How did this logging operation affect your use of this area for hunting, fishing, or other activities?"

10. "Do you know when roads were built in this area?".